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Agency

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September 1991

EPA

Superfund Record of Decision:

Asbestos Dump, NJ

50272-101

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Asbestos Dump, NJ
Second Remedial Action

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Washington, D.C. 20460

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14.

15. Supplementary Notes

16. Abstract (Limit: 200 words)

The Asbestos Dump site is composed of four asbestos disposal areas in Meyersville, Passaic Township, New Jersey. This Record of Decision (ROD) addresses two of the four properties: the 30-acre New Vernon Road site and the 12-acre White Bridge Road site. These properties are bordered by the Great Swamp National Wildlife Refuge, and tracts of wooded and wetland areas. Land use in the area is primarily recreational and residential. From 1968 to 1971, asbestos- containing material generated by the National Gypsum Company was disposed of on the New Vernon Road property in a large depression and in other areas of the property. From 1970 to 1975, asbestos material was disposed of on the White Bridge Road property in what is now a horse-riding track and in other property areas. In a 1990 investigation, EPA identified high levels of asbestos contamination in soil at both properties. Based on this investigation, the Agency for Toxic Substances and Disease Registry (ATSDR) issued a Public Health Advisory, and EPA conducted an immediate removal action at both sites, which included air and soil sampling for asbestos, covering areas of visible asbestos contamination with geotextile fabric, removing any asbestos-containing material located on the ground surface for offsite disposal, and restricting site access. A 1988 ROD

(See Attached Page)

17. Document Analysis a. Descriptors
Record of Decision - Asbestos Dump, NJ
Second Remedial Action
Contaminated Medium: soil
Key Contaminant: inorganics (asbestos)

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report) None	21. No. of Pages 66
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Asbestos Dump, NJ
Second Remedial Action

Abstract (Continued)

addressed another site property, the Millington site, as Operable Unit 1 (OU1), and provided for constructing slope protection/stabilization measures and surface water diversion channels along and on top of the asbestos mound and installing security fences and a soil cover. This ROD addresses the asbestos-contaminated soil on both the New Vernon Road and White Bridge Road properties, as OU2. A subsequent ROD will address the fourth property, the Dietzman Tract, as OU3. The primary contaminant of concern affecting the soil is asbestos, an inorganic.

The selected remedial action for this site includes treating approximately 37,000 cubic yards of asbestos-contaminated soil using in-situ solidification/stabilization and covering the solidified material with 6 inches of soil; conducting confirmatory sampling of soil, sediment, ground water, and surface water; implementing an air monitoring program; and implementing institutional controls. The estimated present worth cost for this remedial action is $5,700,000, which includes an annual O&M cost of $43,400.

PERFORMANCE STANDARDS OR GOALS: The chemical-specific clean-up level for soil at both sites is the Transmission Electron Microscopy (TEM) detection limit of 0.5 percent asbestos.

ROD FACT SHEET

SITE

Name:	Asbestos Dump Site - New Vernon Road and White Brige Road Sites, Operable Unit II
Location/State:	Meyersville, Passaic Township, New Jersey
EPA Region:	II
HRS Score:	39.61 (March 14, 1991)
NPL Rank (date):	512 (March 14, 1991)

ROD

Date Signed: September 27, 1991

Selected Remedy

Soils: In-situ solidification/stabilization treatment technology of asbestos contaminated soils

Direct Capital Cost:	$ 4,700,000
Annual O & M:	$ 43,400
Present Worth:	$ 5,700,000

LEAD

Remedial, EPA	
Primary Contact (phone):	Pamela J. Baxter (212-264-5392)
Secondary Contact (phone):	Kimberly O'Connell (212-264-8127)
Potentially Responsible Party:	National Gypsum Company

WASTE

Type:	Soils - The type of contaminant is asbestos. Confirmatory sampling will be conducted for the presence of other contaminants.
Medium:	Soil is the primary medium contaminated. Confirmatory sampling will be conducted for the presence of asbestos containing material and other contaminants in ground water, surface water and sediments.
Origin:	The asbestos debris was dumped by the named PRP, National Gypsum Company.

DECLARATION STATEMENT

RECORD OF DECISION

Asbestos Dump

FACILITY NAME AND LOCATION

Asbestos Dump - New Vernon Road and White Bridge Road Sites
Meyersville, Passaic Township, New Jersey

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the New Vernon Road and White Bridge Road sites, which are portions of the Asbestos Dump Superfund site. The remedial action was chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan. This decision document summarizes the factual and legal basis for selecting the remedy for the above described portions of the site and is based on the administrative record for the site.

The New Jersey Department of Environmental Protection and Energy concurs with the selected remedy.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Record of Decision, may present an imminent and substantial endangerment to public health, welfare or the environment.

DESCRIPTION OF THE SELECTED REMEDY

The remedial action described in this document represents the second of three planned operable units for the Asbestos Dump site. It involves the solidification/stabilization of asbestos contaminated soils at the New Vernon Road and White Bridge Road residential properties. A previous Record of Decision addressed asbestos contamination at the Millington site. Remediation of the Dietzman Tract, located in the Great Swamp National Wildlife Refuge, will be the subject of a future decision document.

The selected remedy for the New Vernon Road and White Bridge Road sites includes the following components:

- in-situ solidification/stabilization of asbestos contaminated soils;
- appropriate environmental monitoring to confirm the effectiveness of the remedy; and
- implementation of institutional controls to restrict future subsurface activities and assure the integrity of the treated waste.

STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost effective.

This remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable, and satisfies the statutory preference for remedies that employ treatment that reduce toxicity, mobility, or volume as their principal element.

Because the remedy will result in hazardous substances remaining on the sites above health-based levels, a review will be conducted within five years after commencement of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

Constantine Sidamon-Eristoff
Regional Administrator
U.S. EPA Region II

9/27/91
Date

RECORD OF DECISION
DECISION SUMMARY

Asbestos Dump

New Vernon Road and White Bridge Road Sites

Passaic, New Jersey

SITE DESCRIPTION

The Asbestos Dump Superfund site includes four separate properties located in southeastern Morris County, New Jersey and is included on the National Priorities List (NPL). The Millington site, also referred to as the "main site", is located in Millington, New Jersey. The three other sites are known collectively as the "satellites sites" and are the New Vernon Road site and the White Bridge Road site, both located in Meyersville, New Jersey, and the Dietzman Tract which is located in Harding Township, New Jersey.

The Asbestos Dump site is being addressed in three discrete phases, referred to as operable units. A Record of Decision (ROD) for the first operable unit, the Millington site, was signed on September 30, 1988, and is currently in the remedial design phase. The properties of the second operable unit are the New Vernon Road and White Bridge Road sites, and are the subject of this ROD. The Dietzman Tract is the third operable unit; the contamination at this site is currently being investigated.

The New Vernon Road site consists of approximately 30 acres of land located at 237 and 257 New Vernon Road in Meyersville, New Jersey (Figure 1). The property is bounded by New Vernon Road to the west, a portion of the Great Swamp National Wildlife Refuge to the north, and tracts of wooded and wetland areas to the east and south. Currently, one residence is located on the site. The owners of this residence also operate a business on site in a separate building. In addition, an unoccupied dwelling, owned by the site residents, is located on the site. One private residence is located directly south of the New Vernon Road property and another residence is located southwest of the property, to the south of a tennis club, both of which are located on the opposite side of New Vernon Road.

The White Bridge Road site is approximately 300 yards north of the New Vernon Road site and consists of approximately 12 acres of land at 651 White Bridge Road as well as adjoining property, which is part of the Great Swamp National Wildlife Refuge, in Meyersville, New Jersey (Figure 2). This site is bounded by White Bridge Road to the north, the Great Swamp National Wildlife

Refuge to the east and southeast, Black Brook to the southwest and a vacant wooded lot to the west. One private residence is located on the site. Five private residences are located approximately 700 feet north and west of the property. An asphalt driveway located in the northwest portion of the property maintains access to a two story dwelling, garage, two sheds and three stables. A pond, approximately 100 feet in diameter, is located east of these structures. A horse riding track is situated in the east-central portion of the property. This track is approximately 31,250 square feet in size and is located approximately 350 feet from the house and horse stables. The property also includes a large grazing field, which is located west of the horse riding track and wetland areas of the site.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

From 1945 through 1980, the privately owned New Vernon Road property was used for farming. From 1968 to 1971, asbestos containing material (ACM) generated by the National Gypsum Company was disposed of on the site. The ACM included asbestos fibers, broken asbestos tiles, and siding, that was deposited throughout the site. Large amounts of ACM were deposited in the central portion of the property in a large depression. Asbestos has also been detected in other areas of property. In 1980, property ownership was transferred to the current residents.

From 1945 through 1969, the White Bridge Road property was used for farming. In 1970, the property was purchased by the current residents. From 1970 to 1975, ACM consisting of asbestos tiles and siding from the National Gypsum Company, was disposed of on the property. After these disposal activities, the current owner converted the property into a horse farm with stables, a horse riding track, and grazing fields. The horse riding track is comprised of large amounts of ACM mixed with soils. ACM has also been detected in other areas of the site.

The Asbestos Dump site was listed on the NPL on September 1, 1983. In September 1984, the U.S. Environmental Protection Agency (EPA) issued a notice letter to the National Gypsum Company notifying the company of its liability as a Potentially Responsible Party (PRP) and offering it an opportunity to conduct a Remedial Investigation and Feasibility Study (RI/FS). On April 1, 1985, EPA issued an Administrative Order to the National Gypsum Company to conduct the RI/FS at the four sites comprising the Asbestos Dump site. National Gypsum Company performed Remedial Investigation (RI) activities in 1985 and 1986 (hereinafter referred to as the 1985-1986 RI). RI activities were performed at the Millington site and the satellite sites. EPA performed oversight of these activities. In May 1987, National Gypsum Company submitted an RI Report to document its findings. Upon review of the RI Report, EPA determined that

while the RI had adequately characterized contamination at the Millington site, the RI failed to adequately characterize the nature and extent of contamination at the New Vernon Road, White Bridge Road and Deitzman Tract sites.

In August 1990, EPA collected and analyzed soil and dust samples at the New Vernon Road and White Bridge Road sites. Contrary to data reported in the National Gypsum Company's 1987 RI Report, high levels of asbestos were detected. EPA determined that an immediate removal action was necessary to address the imminent threat posed by the sites.

On September 21, 1990, the Agency for Toxic Substances and Disease Registry (ATSDR) issued a health consultation that concluded that the New Vernon Road and White Bridge Road sites posed an imminent and substantial health and safety threat to residents and workers. A Public Health Advisory was issued on December 20, 1990, which recommended, among other things, that affected residents be dissociated from exposure to site-related asbestos.

Removal activities were conducted at both sites in the fall of 1990 to temporarily reduce the potential for airborne asbestos fibers and to restrict access. The following activities were conducted at the New Vernon Road site: signs and temporary fences were erected to restrict access to areas of visible surface contamination; air and soil were sampled for asbestos; two driveways were capped on site with asphalt to cover asbestos; other areas of visible asbestos contamination were covered with geotextile fabric; ACM was removed from a dilapidated shed located next to the driveway and the shed was demolished; the primary residence on site was decontaminated; air samples from the residence were collected and analyzed; the lawn area was visually inspected and ACM located on the ground surface was removed for off-site disposal.

The following activities were conducted during the removal action at the White Bridge Road site: signs and temporary fences were erected to restrict access to areas of visible surface contamination; contaminated areas were covered with geotextile fabric; and air samples from the residence on site were collected and analyzed.

During removal activities in the fall of 1990, EPA initiated an RI/FS at the New Vernon Road and White Bridge Road sites in order to fully characterize the nature and extent of asbestos contamination. Field work was completed in the fall of 1990, and the RI and FS reports were completed in June 1991. The RI included extensive air and soil sampling at both sites and fully defined areas of soil contamination.

On October 28, 1990, the National Gypsum Company filed a voluntary bankruptcy petition under Chapter 11 in Dallas, Texas.

SCOPE AND ROLE OF ACTION

The Asbestos Dump site will be remediated in three operable units. The first operable unit is the Millington site located at 50 Division Ave in Millington, New Jersey. EPA selected a remedy for the Millington site which is documented in a September 30, 1988 ROD. The selected remedy includes the installation of security fences and soil cover, slope protection/stabilization and surface water run-off diversion channels along and on top of the asbestos mound, and operation and maintenance including ground water and surface water monitoring.

The second operable unit, which is the subject of this ROD, includes the properties located at and adjacent to 237 and 257 New Vernon Road and 651 White Bridge Road. Both of these sites are located in Meyersville, New Jersey. This ROD addresses asbestos contaminated soils on both the New Vernon Road and White Bridge Road properties. The conditions at these sites pose a threat to human health and the environment due to the risks from possible inhalation of asbestos fibers.

The third operable unit addresses the Dietzman Tract, which is located in the Great Swamp National Wildlife Refuge in Harding Township, New Jersey. National Gypsum performed investigations at this site as part of the 1985-1986 RI activities, but site contamination was not adequately characterized at that time. Under EPA oversight, National Gypsum initiated a supplemental RI at this site in May 1991.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

On July 8, 1991, EPA presented to the public the Proposed Plan for site remediation, the RI/FS Reports, and other documents which comprise the administrative record for the New Vernon Road and White Bridge Road sites. These documents were made available to the public at the EPA administrative record File Room, 26 Federal Plaza, New York, New York, and at the Passaic Township Free Public Library, 91 Central Avenue, Sterling, New Jersey.

On July 8, 1991, EPA also issued a notice in two local newspapers, which contained information relevant to the public comment period for the site, the date of the public meeting and availability of the administrative record. The public comment period began on July 8, 1991 and ended on August 7, 1991. In addition, a public meeting was held on July 17, 1991 at the Passaic Township Free Public Library. At the meeting, the public was given an opportunity to raise questions and concerns about

the site to EPA. In addition, written comments were accepted during the public comment period. Responses to the comments received during the public comment period are included in the Responsiveness Summary (Attachment 1), which is part of this ROD.

SUMMARY OF SITE CHARACTERIZATION

1. SITE GEOLOGY AND HYDROLOGY

New Vernon Road

The New Vernon Road site consists of unconsolidated sedimentary deposits that are present throughout the site in various thicknesses. The existence and spatial distribution of these deposits is typical of glacial and swamp deposits. A total of five geologic units were identified during test boring activities performed as part of the 1985-1986 RI and are presented in Figure 3.

The uppermost deposit consists of topsoil that varies between four and seven inches in thickness. This deposit is organic-rich in the western and central part of the investigated area near soil borings TB-NVR1 and TB-NVR2 and becomes a finer-grained deposit eastward at soil boring TB-NVR3.

Asbestos fill is present in the main landfill area located in the central portion of the site, and throughout the property. This asbestos fill is most extensive (approximately eight feet in depth) in the central landfill area and consists of broken asbestos tiles and asbestos fibers.

Underlying the asbestos fill is a unit of sandy clay. The unit varies laterally from a yellow, dry silty/sandy clay to a brown silty clay and decreases in thickness to the west. It is absent at boring TB-NVR1.

Ground water data was collected from three monitoring wells at the site during National Gypsum Company's 1985-1986 RI. The ground water flow direction and hydraulic gradient were assessed from the potentiometric map (Figure 4) constructed from ground water elevation data. Ground water flow direction at this site is in a southwest to northeast direction with an extremely low gradient which is indicative of slow ground water flow. Ground water is flowing through the subsurface asbestos contamination at this site east toward the Great Swamp National Wildlife Refuge property. The water table fluctuates from a depth of one to five feet from the surface. Therefore, some asbestos containing material is present within the water table.

White Bridge Road

Geologic information at the White Bridge Road site (Figure 5) was collected primarily within the northern, asbestos landfilled sector. Test boring information revealed the presence of three major, naturally occurring, unconsolidated, sedimentary deposits of various composition and thickness at various depths underlying the asbestos fill.

The asbestos fill is comprised of an upper layer consisting mostly of broken asbestos tiles and a lower layer that is made up of loose asbestos fibers. Within the vicinity of the riding track, the asbestos fill is approximately 10 feet in depth and decreases in thickness outward from this area.

Underlying the asbestos fill is a layer of organic-rich, black to brown-colored, silty and extremely fibrous, peat-like material. This deposit is thickest in the vicinity of boring TB-WBR3, where three feet of it is present and pinches out to the north at boring TB-WBR2, which contains only one-half foot of the deposit.

Beneath the organic-rich deposit lies a deposit of poorly-sorted silty sand. This sand was the most extensive deposit at the site. Its thickness ranged from 9.5 feet at the edges of the site (borings TB-WBR1 and TB-WBR2) to 5.5 feet in the middle of the site at boring TB-WBR3. This unit consists of brown, sandy silt, with lateral variations. Samples of this unit at boring TB-WBR2 consisted of gray, coarse silty sand that grades into brown, fine silty sand toward boring TB-WBR3. The largest variation within this unit lies between borings TB-WBR3 and TB-WBR1. Within this area, the unit changes from brown, fine silty sand to a brown, fine sandy silt and silty sand unit within the upper half, to a brown, sand silt in the lower half of the deposit.

A clay unit is present at boring TB-WBR1 at a depth of 10 feet. This unit is primarily composed of gray, soft clay that contains laminae of silty clay and occasional lenses of fine sand. Although this clay unit was not encountered in borings TB-WBR2 and TB-WBR3 due to their shallow sampling depth, it is assumed that the clay underlies the silty sand unit at a deeper depth throughout the site.

Ground water data was collected from three monitoring wells installed at the site during National Gypsum Company's 1985-1986 RI. Ground water flow direction and the hydraulic gradient of this site was assessed from the potentiometric surface map illustrated in Figure 6. The ground water flow direction is northeast toward the Great Swamp National Wildlife Refuge property. The low ground water gradient at this site suggests that ground water movement is very slow.

2. SITE SOILS

Soils were investigated during the 1985-1986 RI performed by National Gypsum Company and during EPA's 1990 RI at the New Vernon Road and White Bridge Road sites. During the 1985-1986 RI, site soils were sampled for various parameters including volatile organic and inorganic compounds. No asbestos sampling was performed on site soils at that time. EPA's 1990 RI included extensive soil sampling to determine the vertical and horizontal extent of asbestos contamination at the sites. A grid pattern was established at the sites and sampling was performed systematically to assure comprehensive sampling. In addition, soil borings were installed to determine the depths of ACM on the sites.

Soils samples were analyzed for asbestos by one of two analytical methods; Polarized Light Microscopy (PLM), or Transmission Electron Microscopy (TEM). The PLM method is less sensitive than the TEM method and was used to analyze samples with high levels of asbestos as determined by visual observation. The method detection limit for the PLM method is 1 percent asbestos. The TEM method is the most sensitive available method (i.e., can detect lower levels of asbestos than the PLM method or any other available method) and was used to analyze samples which were not observed to contain visible asbestos contamination. The TEM method can detect and quantify asbestos at levels of 0.5 percent or greater.

New Vernon Road

During the 1985-1986 RI, four subsurface soil samples were collected and analyzed at the New Vernon Road site (Table 1). Although the data collected does not indicate high levels of contamination by volatile organics, base/neutral compounds or metals, data quality concerns necessitate additional sampling and analysis of these parameters during the remedial design phase to confirm these findings.

Asbestos sampling of site soils was performed during EPA's 1990 RI. A grid pattern was developed to accurately assess the extent of asbestos contamination on the site. A total of 188 surface samples were collected and analyzed for asbestos. Shallow subsurface samples (a total of 112) were collected at five different depth intervals and were analyzed for asbestos (Table 2).

The surface area containing greater than 0.5 percent asbestos is approximately 95,130 square feet. Figure 7 depicts the surface areas of detected asbestos contamination. The total volume of soils containing greater than 0.5 percent asbestos located on the site is approximately 15,800 cubic yards.

White Bridge Road

During the 1985-1986 RI, four subsurface soil samples were collected and analyzed at the White Bridge Road site (Table 3). Although the data collected does not indicate high levels of contamination by volatile organics, base/neutral compounds or metals, data quality concerns necessitate additional sampling and analysis of these parameters during the remedial design phase to confirm these findings.

During the 1990 RI, a grid pattern was developed to assess the extent of asbestos contamination at the site. A total of 133 surface samples were collected and analyzed for asbestos. EPA collected 70 subsurface soil samples at four different depth intervals (Table 4).

The surface area containing greater than 0.5 asbestos is approximately 85,600 square feet. Figure 8 depicts the surface areas of detected asbestos contamination. The total volume of soils containing greater than 0.5 percent asbestos located on the site is approximately 21,300 cubic yards.

3. GROUND WATER

During the 1985-1986 RI, three monitoring wells were installed at the New Vernon Road site and three at the White Bridge Road site. The monitoring wells were located along the perimeters of the asbestos fill areas (see Figures 4 and 6). In addition, ground water samples were obtained from potable wells which were located in the vicinity of the two sites. These wells were analyzed for volatile organics, base/neutral compounds, phenols, pesticides and metals (Tables 5 and 5). Sampling results from both on-site and off-site wells indicated no significant ground water contamination by any of the above constituents at either of the two sites. However, data quality concerns associated with the analytical results necessitate additional sampling during the remedial design phase to confirm these findings.

All ground water samples were analyzed for asbestos contamination. None were found to contain asbestos concentrations above the reported analytical detection limit of 100,000 fibers per liter (Table 7).

4. SURFACE WATER AND SEDIMENTS

As part of the 1985-1986 RI, two surface water and two sediment samples were collected from a drainage ditch located downgradient of the New Vernon Road site (Tables 8 and 9). Three surface water and three sediment samples were collected from Black Brook, in the vicinity of the White Bridge Road site (Table 10 and 11).

Two of the three surface water and sediment samples were collected downgradient of the site, the other surface water and sediment sample was collected upstream.

Surface water and sediment samples were analyzed for volatile organic compounds, base/neutral compounds, phenols and metals. However, EPA cannot make final determinations regarding the status of surface water and sediments based on the data collected due to data quality concerns associated with the analytical results. Therefore, additional sampling will be performed during the remedial design phase of this project.

At the New Vernon Road site, the two surface water and sediment samples collected were analyzed for asbestos (Table 12). Neither of the sediment samples contained detectable asbestos. One surface water sample did not contain asbestos above the detection limit. The other surface water sample contained asbestos above the detection limit, however, the level detected was low (below the Maximum Contaminant Level (MCL) established for asbestos of 7,000,000 fibers per liter).

At the White Bridge Road site, the three surface water and three sediment samples collected were analyzed for asbestos (Table 13). None of the sediment samples contained asbestos above the detection limit. The three surface water samples all contained detectable levels of asbestos, however the levels detected were low (below the MCL established for asbestos).

5. AIR

Ambient air samples were taken and analyzed for asbestos fiber concentrations during National Gypsum's 1985-1986 RI and during the 1990 field investigation.

Results from National Gypsum's 1985-1986 RI indicated that all air samples at the White Bridge Road property boundaries contained asbestos concentrations below the method detection limit of 0.01 fibers per cubic centimeter (cc) by analysis with the Phase Contrast Microscopy (PCM) method. At the New Vernon Road property, two samples contained asbestos concentrations below the method detection limit. One sample and its duplicate contained asbestos concentrations of 0.014 and 0.032 fibers per cc, respectively.

A total of 83 air samples were taken during EPA's 1990 RI at the New Vernon Road and White Bridge Road sites (Tables 14 and 15). Air samples were collected upwind and downwind of specific locations on the properties and from personal protection equipment. Of the 83 samples, 54 samples were collected from the New Vernon Road site and 29 samples from the White Bridge Road site. Air concentrations of asbestos ranged from 0.000 to 0.063

fiber per cc and 0.00 to 0.012 fibers per cc at the New Vernon Road and White Bridge Road properties, respectively. All air samples were analyzed using the PCM method.

SUMMARY OF SITE RISKS

EPA conducted a baseline Risk Assessment (RA) to evaluate the potential risks associated with current and future conditions at the sites. The baseline RA estimates health risks which could result from contamination at the sites if no remedial action is taken.

Asbestos was the only contaminant determined to be present in the air at the sites as a result of soil contamination. The maximum concentration of asbestos detected in the air at each site was used in the RA and is listed in Table 16.

The exposure pathways evaluated in this assessment represent the major current land use as well as future land-use exposure pathways. The inhalation of asbestos in the air was evaluated for adult on-site residents. Current land use for both sites is residential. Future land use is assumed to remain residential.

Asbestos has been given an "A" classification by the EPA, denoting a human carcinogen. The basis for this classification is the observation of increased mortality and incidence of lung cancer in occupationally exposed workers across study populations. Due to lack of toxicity data on potential noncarcinogenic effects, only carcinogenic risks posed by asbestos were evaluated in the RA.

Potential carcinogenic risks are evaluated using the cancer unit risks and/or slope factors developed by the EPA for chemicals of concern. Cancer unit risks (URs) and slope factors (SFs) have been developed by EPA's Carcinogenic RA Verification Endeavor for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic chemicals. A unit risk establishes the relationship between the dose of a chemical and the response. The UR (Table 17), which in the case of asbestos is expressed in units of $(fibers/cc)^{-1}$, is multiplied by the asbestos concentration in units of fibers/cc, to generate an upper-bound estimate of the excess lifetime cancer risk associated with exposure at that concentration. The term "upper bound" reflects the conservative estimate of the risks calculated from the UR.

For known or suspected carcinogens, EPA considers excess upperbound individual lifetime cancer risks of between 10^{-4} and 10^{-6} to be acceptable. This level indicates that an individual does not have an additional chance greater than one in ten thousand to one in a million of developing cancer as a result of

site-related exposure to a carcinogen over a 70-year period under the specific exposure conditions at the site.

The cumulative upper bound risks associated with potential exposures to maximum asbestos concentrations in air at the New Vernon Road and White Bridge Road sites are 1×10^{-2} (one in a hundred) and 3×10^{-3} (three in a thousand), respectively (Table 18). These upper bound risks are significantly greater than the acceptable EPA risk range.

Actual or threatened release of hazardous substances from this site, if not addressed by the preferred alternative or one of the other active measures considered, may present a current or potential threat to public health, welfare, or the environment.

To address risks posed by airborne asbestos, EPA has established a remediation goal for contaminated site soils, which are a source of airborne asbestos. Since any detectable levels of airborne asbestos may pose an unacceptable risk, the source of this contamination should be remediated to the maximum extent achievable. Therefore, EPA has selected the TEM method detection limit of 0.5 percent asbestos as a remediation goal because this will result in treatment of the maximum amount of asbestos possible. The selection of this remediation goal is consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

UNCERTAINTIES

The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a wide variety of uncertainties. In general, the main sources of uncertainty include:

- environmental chemistry sampling and analysis
- environmental parameter measurement
- fate and transport modeling
- exposure parameter estimation
- toxicological data

Environmental chemistry analysis error can stem from several sources including errors inherent in the analytical methods and characteristics of the matrix being sampled. Uncertainty in environmental sampling arises in part from the potentially uneven distribution of chemicals in the media samples. In this case, the RA was based on maximum detected asbestos concentrations.

Uncertainties in the exposure assessment are related to estimates of how often an individual would actually come in contact with the chemicals of concern, the period of time over which such exposure would occur, and in the models used to estimate the

concentrations of the chemicals of concern at the point of these sites assuming exposure of 365 days per year.

These uncertainties are addressed by making conservative assumptions concerning risk and exposure parameters throughout the assessment. As a result, the RA provides upper bound estimates of the risks to populations near the sites and is highly unlikely to underestimate actual risks related to the site.

DESCRIPTION OF ALTERNATIVES

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act, requires that each site remedy selected must be protective of human health and the environment, cost-effective, and use permanent solutions and treatment technologies to the maximum extent practicable.

At the New Vernon Road and White Bridge Road sites, the remedial objectives focus on controlling the migration of asbestos. The remedial measures evaluated were designed to address the potential public health risks posed by the sites. Based on the data collected during the RI, a range of alternatives were developed to address asbestos contamination at the sites. These alternatives are presented in detail in the FS report and are summarized below.

The time to implement each alternative listed below represents actual construction and treatment time frames, where applicable, and does not include the time required to perform remedial design activities prior to construction. All alternatives except the No Action alternative would include confirmatory ground water, surface water, sediment and soil sampling.

Alternative 1: No Action

Capital Cost:	$ 0
Annual Operation and Maintenance (O & M) Costs :	$ 0
Present Worth Cost:	$ 0
Time to Implement:	N/A

The NCP requires that the No Action alternative be evaluated at every site to establish a baseline for comparison to other alternatives. Under the No Action alternative, both sites would remain in their present condition, with no remedial effort implemented. Access to both properties is currently not restricted. No measures to mitigate asbestos migration or reduce contaminant concentrations would be taken. The selected cleanup

level of 0.5 percent asbestos would not be attained under the No Action alternative.

Alternative 2: Native Soils/Vegetative Cap

Capital Cost:	$ 1,200,000
Annual O & M Cost:	$ 210,000
Present Worth Cost:	$ 1,700,000
Time to Implement:	6 months

Capping the ACM on the sites would reduce the potential of direct human contact with contaminants at or near surface grade, and would reduce the continued migration of asbestos into the air. The caps would be constructed of approximately two feet of topsoil from an off-site source. The caps would be seeded with vegetation to minimize erosion.

The caps would be maintained to ensure continued performance. Inspection of the caps would be performed on a monthly basis, and occasional mowing would be necessary to preclude the establishment of deep-rooted vegetation which could compromise cap integrity. Berms would be constructed and maintained to manage water run-on and run-off from the capped areas. Inspection and maintenance of the caps would be conducted indefinitely.

Institutional controls regarding future construction and other activities on the sites would be necessary to ensure the integrity of the caps.

Alternative 3: ACM Excavation and Off-Site Vitrification

Capital Cost:	$ 20,100,000
Annual O & M Cost:	$ 43,000
Present Worth Cost:	$ 24,700,000
Time to Implement:	7 months

This alternative calls for the excavation of all ACM detected above the cleanup level at the sites (approximately 37,100 cubic yards). Excavation activities would be conducted using proper dust suppression controls and containerization of wastes. In addition, it may be necessary to erect a temporary structure to enclose areas undergoing excavation to control airborne asbestos. ACM would be placed in roll-off containers and would be sealed with plastic sheeting to ensure containment of ACM. Containerized ACM would be transported approximately 250 miles to an off-site vitrification facility.

To implement this alternative, it would be necessary to construct ground water collection trenches upgradient of the excavation

areas on both sites. The trenches would divert ground water flow around the excavation area to allow dewatering of the ACM, some of which is located below the water table.

In the vitrification process, ACM is electronically heated in a glass-making furnace. A mixture of the ACM and waste glass are fed into the unit and heated to approximately 2,600 °F. Asbestos is thermally decomposed and rendered non-toxic by the vitrification process. Following vitrification, the fragmented, glass-like material could be used in several applications, including road surfacing. After excavation, the sites would be backfilled with clean soil and graded.

Alternative 4: In-Situ Solidification/Stabilization

Capital Cost:	$ 4,700,000
Annual O & M Cost:	$ 43,000
Present Worth Cost:	$ 5,700,000
Time to Implement:	10 months

In this alternative, ACM would be treated in-situ (in place) using a cement-based solidification/stabilization process. This alternative would limit the mobility of ACM by binding it in an insoluble matrix. All ACM above the cleanup level of 0.5 percent asbestos would be treated. Approximately 21,300 cubic yards of ACM at the White Bridge Road site and 15,800 cubic yards of ACM at the New Vernon Road site would be treated in-situ.

The solidification/stabilization technology consists of a batch mixing plant that supplies a slurry feed of cement and proprietary chemicals, and a soil mixing system which delivers the slurry feed and mixes it with the waste materials in situ. The treated material would exhibit a volume increase of approximately 10 percent. In addition, after solidification, the sites would be appropriately graded and a minimum of six inches of soil would be placed over the solidified material. After implementation, air monitoring would be performed to demonstrate the effectiveness of this alternative.

Institutional controls regarding future construction and other activities at the sites would be implemented to ensure the integrity of the solidified material.

Alternative 5: ACM Excavation and Off-Site Landfill Disposal

Capital Cost:	$ 12,900,000
Annual O & M Costs:	$ 43,000
Present Worth Cost:	$ 16,000,000
Time to Implement:	8 months

The components of this alternative which relate to excavation procedures are the same as those described in Alternative 3. The major difference between Alternative 3 and Alternative 5 is the fate of the excavated ACM. In Alternative 5, all ACM detected above the cleanup level would be transported and disposed of in an approved landfill. After excavation, the sites would be backfilled with clean soil.

SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

The alternatives identified above were initially evaluated on the basis of technical effectiveness and feasibility, public health and environmental effects, institutional issues, and costs, as presented in the FS. Subsequently, these alternatives were also evaluated using the following criteria derived from the NCP and CERCLA, as amended, as presented in the Proposed Plan.

Overall Protection of Human Health and the Environment evaluates the ability of the remedy to provide adequate protection and describes how risks posed through each pathway are eliminated, reduced or controlled through treatment, engineering controls or institutional controls.

Compliance with ARARs evaluates the ability of an alternative to meet applicable or relevant and appropriate requirements (ARARs) established through Federal and State statutes and/or provides the basis for invoking a waiver.

Long-term Effectiveness and Permanence evaluates the ability of an alternative to provide long-term protection of human health and the environment and the magnitude of residual risk posed by untreated wastes or treatment residuals.

Reduction of Toxicity, Mobility or Volume Through Treatment evaluates the degree to which an alternative reduces risks through the use of treatment technologies.

Short-term Effectiveness addresses the cleanup time frame and any adverse impacts posed by an alternative during the construction and implementation phase, until cleanup goals are achieved.

Implementability is an evaluation of the technical feasibility, administrative feasibility, and availability of services and materials required to implement an alternative.

Cost includes an evaluation of capital costs, annual operation and maintenance costs, and net present worth costs.

State Acceptance indicates the State's response to the alternatives in terms of technical and administrative issues and concerns.

Community Acceptance evaluates the issues and concerns that the public may have regarding the alternatives.

A comparative discussion of the seven alternatives on the basis of the evaluation criteria presented above follows.

Overall Protection of Human Health and the Environment: The No Action alternative would not provide adequate protection of human health by eliminating, reducing, or controlling risks posed by ACM. Alternatives 3 and 5 would achieve cleanup levels, but involve ACM excavation, which presents short-term risks due to fugitive dust emissions caused by disturbance of surface and subsurface ACM. Alternative 4, solidification/stabilization, would provide a high degree of protection and attain cleanup levels without excavation of waste materials, with some limited short-term risks due to ACM disturbance during implementation. This short-term risk is expected to be significantly less than the risks short-term posed by Alternatives 3 and 5. Alternative 2, capping, would provide some degree of protection because it would reduce the release of airborne asbestos. Alternative 2 poses less short-term risks than Alternatives 3, 4 and 5 because it involves no disturbance of subsurface ACM.

Compliance with ARARs: Alternative 1, No Action, leaves wastes untreated on site above the cleanup level. Since the potential exists for asbestos to become airborne, this alternative would not attain ARARs or cleanup levels for the site.

Alternatives 2,3,4 and 5 could be implemented in compliance with the National Emissions Standards for Hazardous Air Pollutants and other ARARs.

Chemical specific ARARs are health or risk based concentration limit or ranges in various environmental media for specific hazardous substances, pollutants or contaminants. Chemical-specific ARARs for asbestos in soils have not been promulgated. The cleanup level established for soils at the sites is the TEM detection limit of 0.5 percent asbestos. The two alternatives which include excavation, Alternatives 3 and 5, as well as Alternative 4, solidification/stabilization, are expected to attain the selected cleanup level in the long term. However, since these alternatives disrupt subsurface ACM to varying degrees, stringent controls would have to be implemented during remedial activities to assure compliance with ARARs for airborne asbestos concentrations.

Alternative 2, capping, would cover all asbestos above the cleanup level, but would not treat the asbestos, as would Alternative 4, or remove asbestos, as would Alternatives 3 and 5.

Long-term Effectiveness and Permanence: Alternative 1, No Action, does not offer long-term effectiveness or permanence.

Alternatives 3 and 5, excavation with off-site vitrification and landfilling, respectively, would provide the greatest long-term effectiveness and permanence for the sites since ACM is excavated and transported off-site for treatment or disposal. These two alternatives require no residuals management.

Alternative 4, solidification/stabilization, offers a high degree of permanent treatment of ACM on site. Although the waste remains on site, it is expected that this remedy would achieve long-term reliable protection by immobilizing the ACM.

Alternative 2, capping, reduces risks posed by airborne asbestos through containment. The degree of permanence achieved would be less than Alternatives 3, 4 and 5, since untreated waste remains on site. In addition, this alternative would require continual maintenance and institutional controls to assure its long-term effectiveness. Furthermore, ACM, through the annual freeze/thaw cycle, could migrate through soil to the surface.

Short-term Effectiveness: The potential risks posed by the site remain unchanged, and the remedial response objectives would not be achieved for the No Action alternative.

With capping, Alternative 2, risks to remediation workers may occur during cap construction due to surface soil contamination, but potential risks would be lower than the short-term risks posed by Alternatives 3, 4 or 5. Remedial response objectives could potentially be achieved in approximately six months.

Alternatives 3 and 5 would pose the greatest short-term risks. These alternatives would pose similar short-term risks due to the common elements of excavation and transportation of large volumes (approximately 37,100 cubic yards) of ACM. The activities would require full disturbance of all surface and subsurface ACM, which would increase the potential for mobility of asbestos in the air. This would increase the short-term respiratory risks at the site. For Alternatives 3 and 5, remedial response objectives would be achieved within seven months and eight months, respectively.

Alternative 4, in situ solidification/stabilization, would pose some short-term respiratory risks, but risks are more controllable than with Alternatives 3 and 5. Disturbance of surface and subsurface ACM would occur, but to a much lesser degree than excavation. Remedial response objectives would be achieved within ten months.

Implementability: Alternative 1, No Action, requires no implementation of remedial measures. While Alternative 2, capping, would be easily implemented since capping construction

methods are well developed, the presence of wetlands on the sites would require a high level of maintenance. Erosion and soil movement in a wetlands environment would continually contribute to degradation of the cap.

There would be some difficulties in the implementation of Alternatives 3 and 5 because excavation of ACM must be carefully managed to control short-term risks. In addition, the excavation alternatives would require excavation of ACM below the water table. Construction of trenches would be required to control ground water flow during excavation activities. Controlling such flow during excavation can be complicated and will add to the difficulty of implementing Alternatives 3 and 5. Further, the off-site vitrification component of Alternative 3 poses other problems in that the availability of the vitrification system is extremely limited as this is a currently developing technology.

Alternative 4, solidification/stabilization, is fairly easy to implement because ACM would be handled on site. This technology has been employed at a number of hazardous waste sites. The high water tables present at the sites are not expected to be detrimental to the implementation of the solidification/ stabilization process since the process requires the addition of water. Various tests performed on cement based agents reveals that the cement mass will continue to harden while submerged in water for many years. While a treatability study would be performed to confirm the technology's effectiveness for treating the site-specific ACM, no significant technical problems are anticipated.

The sites would be able to accommodate the estimated volume increase resulting from this treatment. While this alternative is more difficult to implement than Alternative 2, solidification/stabilization would be more easily implemented than Alternatives 3 and 5.

Reduction of Toxicity, Mobility or Volume: Alternative 1, No Action, provides no reduction in toxicity, mobility or volume of ACM.

Alternative 3, excavation and off-site vitrification, provides the highest degree of long-term reduction of toxicity, mobility and volume by removal of the ACM from the sites and the thermal destruction of asbestos at an off-site location. However, Alternative 3 along with Alternative 5, excavation with off-site landfilling, provide the greatest potential for increased mobility of asbestos during remediation. While Alternative 5 would reduce the toxicity, mobility and volume of asbestos in the long term at the sites, it does not treat the asbestos. Therefore, the risks are reduced at the sites, but the toxicity and volume of the asbestos would not be reduced permanently.

Controls utilized by the approved landfill would provide a reduction in mobility of the ACM.

Alternative 4, solidification/stabilization, would provide a reduction in ACM mobility through immobilization. The risks associated with the asbestos would be significantly reduced since it would be bound in an insoluble matrix and no longer available for uptake in the environment. Treatment by in-situ solidification/stabilization would increase the volume of the initial untreated materials by an estimated 10 percent.

Alternative 2, capping, would reduce the mobility of ACM through containment. Stringent cap maintenance procedures must be employed to assure continued reduction of mobility in the future. No reduction in ACM toxicity or volume would be obtained through this alternative.

Cost: The No Action alternative is the least costly, but most detrimental to human health and the environment. The estimated present worth cost of each alternative is as follows:

1) No Action	$ 0
2) Soil/Vegetative Cap	$ 1.7 million
3) ACM Excavation and Off-Site Vitrification	$ 24.7 million
4) In-Situ Stabilization/ Solidification	$ 5.7 million
5) ACM Excavation and Off-Site Landfilling	$ 15.5 million

The costs to implement Alternatives 3 and 5 are much higher than for the other alternatives. The higher short-term risks associated with Alternatives 3 and 5, coupled with the implementability difficulties of Alternatives 3 and 5 and the lack of treatment associated with Alternative 5, make these two alternatives less cost effective than Alternatives 2 and 4. Alternative 4 is cost effective since it achieves remedial action objectives and a similar degree of protectiveness compared to the excavation alternatives and at a lower cost. Further, Alternative 4 is cost effective compared to Alternative 2 as it offers a much higher degree of long term protectiveness and permanence.

State Acceptance: The New Jersey Department of Environmental Protection and Energy has concurred with the selected remedy.

Community Acceptance: Based upon public comments addressed in the Responsiveness Summary (Attachment 1), the community generally concurs with the selected remedy.

SELECTED REMEDY

The selected alternative for remediation of asbestos contamination at the New Vernon Road and White Bridge Road sites is Alternative 4, solidification/stabilization. This remedy will treat ACM with detected levels of asbestos of 0.5 percent or greater (approximately 37,100 cubic yards). The asbestos will be immobilized in an insoluble matrix. Accordingly, this treatment will significantly reduce the risks posed by airborne asbestos at the sites. In addition, after solidification, the sites will be appropriately graded and soil will be placed over the solidified material. Institutional controls will be imposed to restrict future surface and subsurface activities which could affect the integrity of the treated waste.

Solidification/stabilization will provide a high degree of long-term effectiveness and permanence, will reduce the mobility of asbestos waste, and is implementable in comparison with other alternatives evaluated. The selected alternative is cost effective compared to the other alternatives evaluated.

As part of the selected remedy at the sites, a treatability study will be performed in the remedial design phase to provide site specific information for the performance of remedial design activities. In addition, a wetlands delineation and assessment will be performed at the sites. All efforts will be made to minimize impacts to wetlands in implementing the selected remedy.

Confirmatory sampling will be conducted at the sites for ground water, surface water, sediments and soils to assure the absence of significant contamination by organic compounds, base/neutral compounds and metals. If upon further sampling, it is determined that there are chemical compounds present at levels of concern, appropriate actions will be taken to address the contamination. In addition, ground water, surface water and sediments will be sampled and analyzed for asbestos to confirm the results of previous sampling.

Upon implementation of the selected remedy, an air monitoring program will be implemented to assure the absence of unsafe levels of asbestos contamination at the sites.

The selected alternative presents the best balance with respect to the evaluation criteria and will meet the statutory requirements of CERCLA Section 121(b): 1) to protect human health and the environment; 2) to comply with ARARs; and 3) to be cost effective. The selected alternative utilizes permanent solutions and alternative technologies to the maximum extent practicable and satisfies the statutory preference for treatment as a principal element.

A review every five years will be conducted to evaluate the effectiveness of the remedy for the sites for a minimum of 30 years.

STATUTORY DETERMINATIONS

Under Section 121 of CERCLA and 40 C.F.R. §300.430(f) of the NCP, selected remedies must meet certain statutory and regulatory requirements. These requirements and a description of how the selected remedy satisfies each requirement are presented below.

Protection of Human Health and the Environment

The selected remedy will protect human health and the environment through treatment while also meeting ARARs and minimizing short-term risks.

Compliance with ARARs

The selected remedy has been developed to meet Federal and State ARARs for asbestos.

Cost-Effectiveness

The selected remedy provides effective treatment of contaminated soil and is cost effective compared to other alternatives. The treatment methods included in the selected remedy are expected to attain cleanup goals at the Asbestos Dump site.

Utilization of Permanent Solutions and Alternative Treatment Technologies

EPA has determined that the selected remedy utilizes permanent solutions and treatment technologies to the maximum extent practicable. This determination was made based on the comparative evaluation of alternatives with respect to long-term effectiveness and permanence, reduction of toxicity, mobility or volume through treatment, short-term effectiveness, implementability, and cost, as well as the statutory preference for treatment as a principal element, and State and community acceptance.

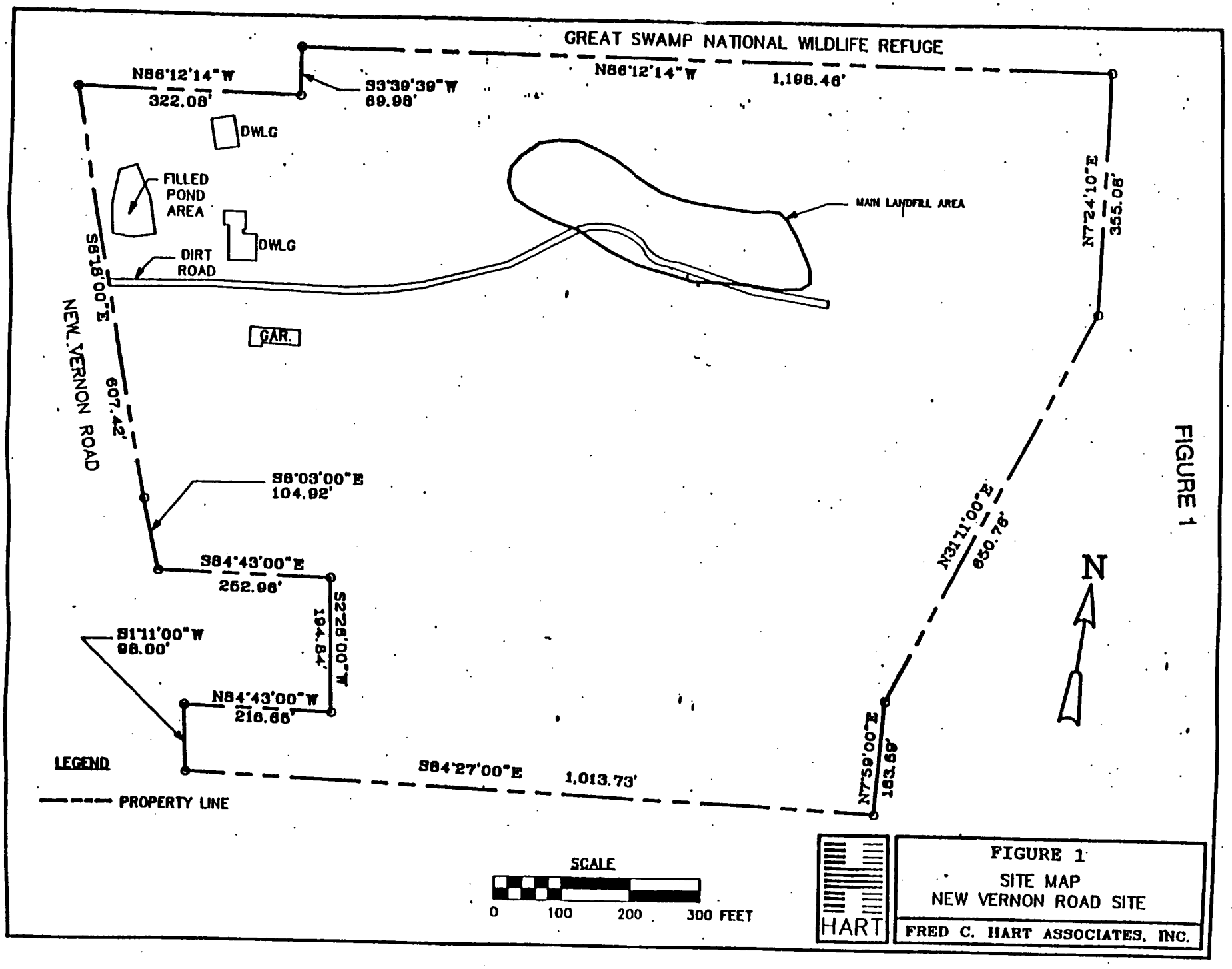
State and Community Acceptance

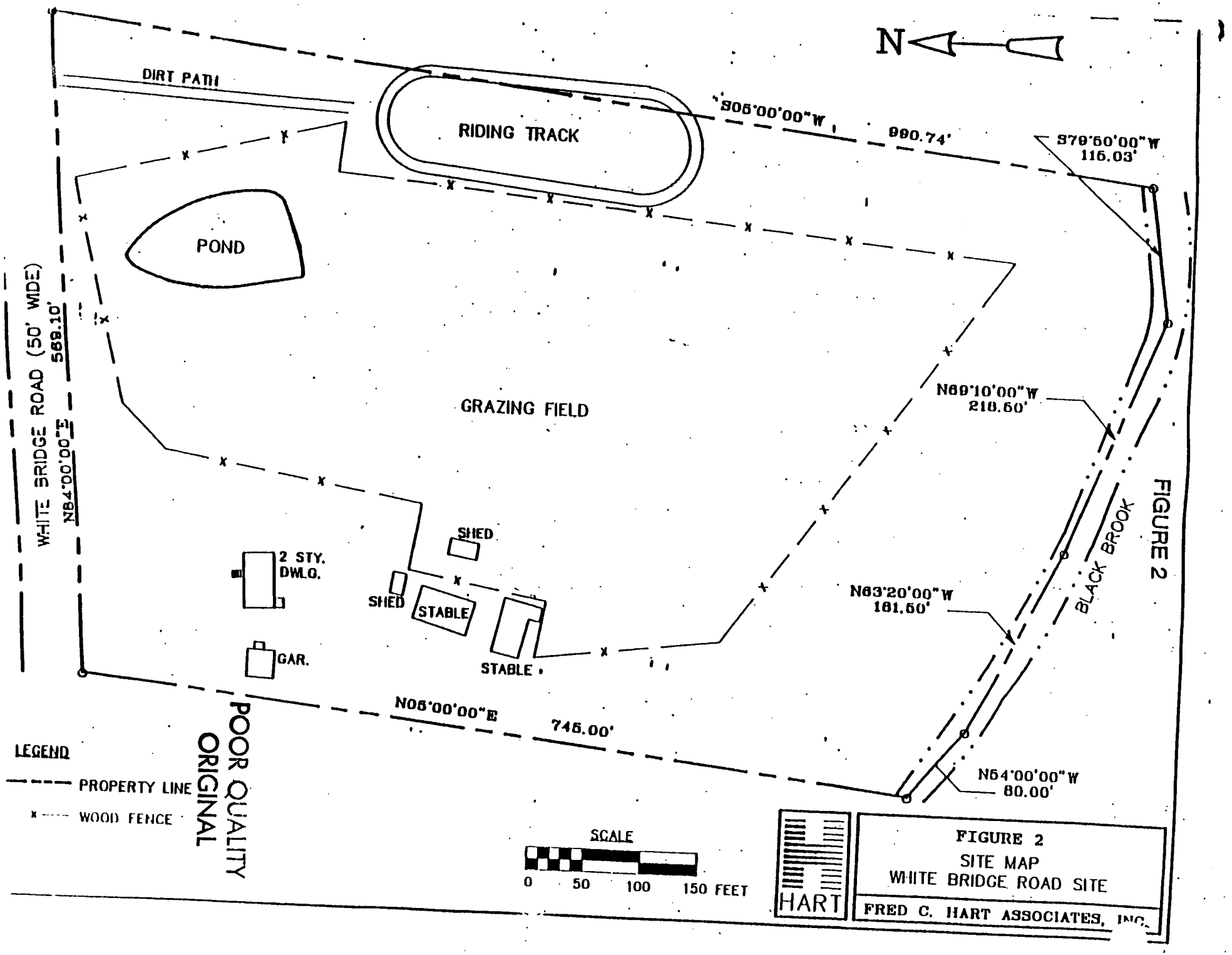
The State of New Jersey concurs and the community generally concurs with the selected remedy for the Asbestos Dump, New Vernon Road and White Bridge Road sites (Operable Unit 2).

DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for the second operable unit remedial action at the Asbestos Dump site was released for public comment on July 8, 1991. The Proposed Plan identified Alternative 4 (solidification/stabilization) as the preferred response action. All written and verbal comments submitted during the public comment period were reviewed by EPA. Upon review of these comments, it was determined that no significant changes to the remedy, as it was originally identified in the Proposed Plan, were necessary.

FIGURES AND TABLES


GREAT SWAMP NATIONAL WILDLIFE REFUGE
N86°12'14"W
322.08'
S3°39'39"W
69.98'
N86°12'14"W
1,198.46'
DWLG
FILLED
POND
AREA
DWLG
DIRT
ROAD
MAIN LANDFILL AREA
N72°41'0"E
355.08'
S6°18'00"E
NEW VERNON ROAD
607.42'
GAR.
S6°03'00"E
104.92'
S84°43'00"E
252.96'
S2°26'00"W
194.84'
S1°11'00"W
98.00'
N84°43'00"W
216.66'
N31°11'00"E
650.78'
N7°59'00"E
183.69'
S84°27'00"E
1,013.73'
LEGEND
PROPERTY LINE
SCALE
0
100
200
300 FEET
N
HART
FIGURE 1
SITE MAP
NEW VERNON ROAD SITE
FRED C. HART ASSOCIATES, INC.
FIGURE 1



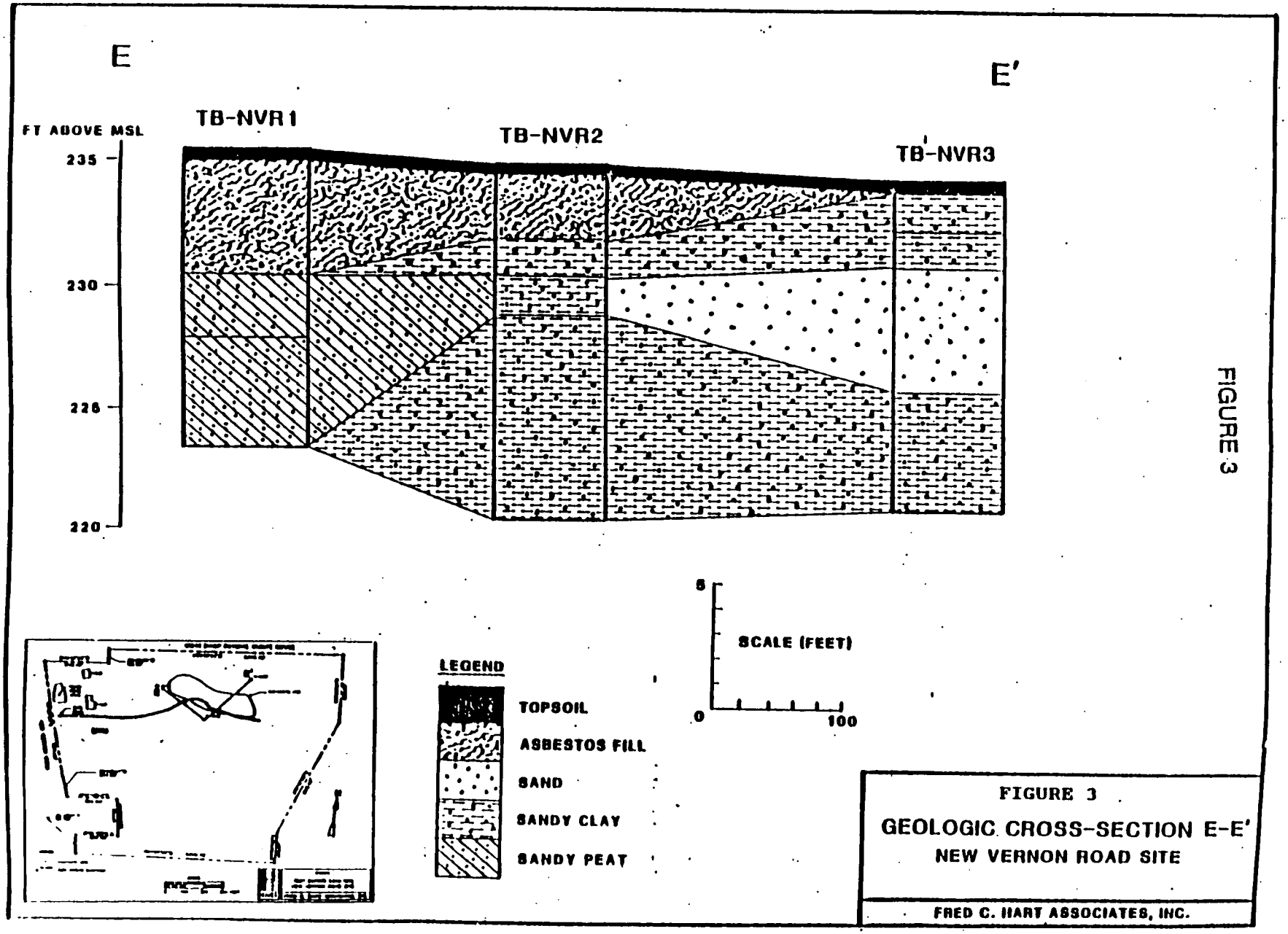


FIGURE 3

FIGURE 3

GEOLOGIC CROSS-SECTION E-E'

NEW VERNON ROAD SITE

FRED C. HART ASSOCIATES, INC.

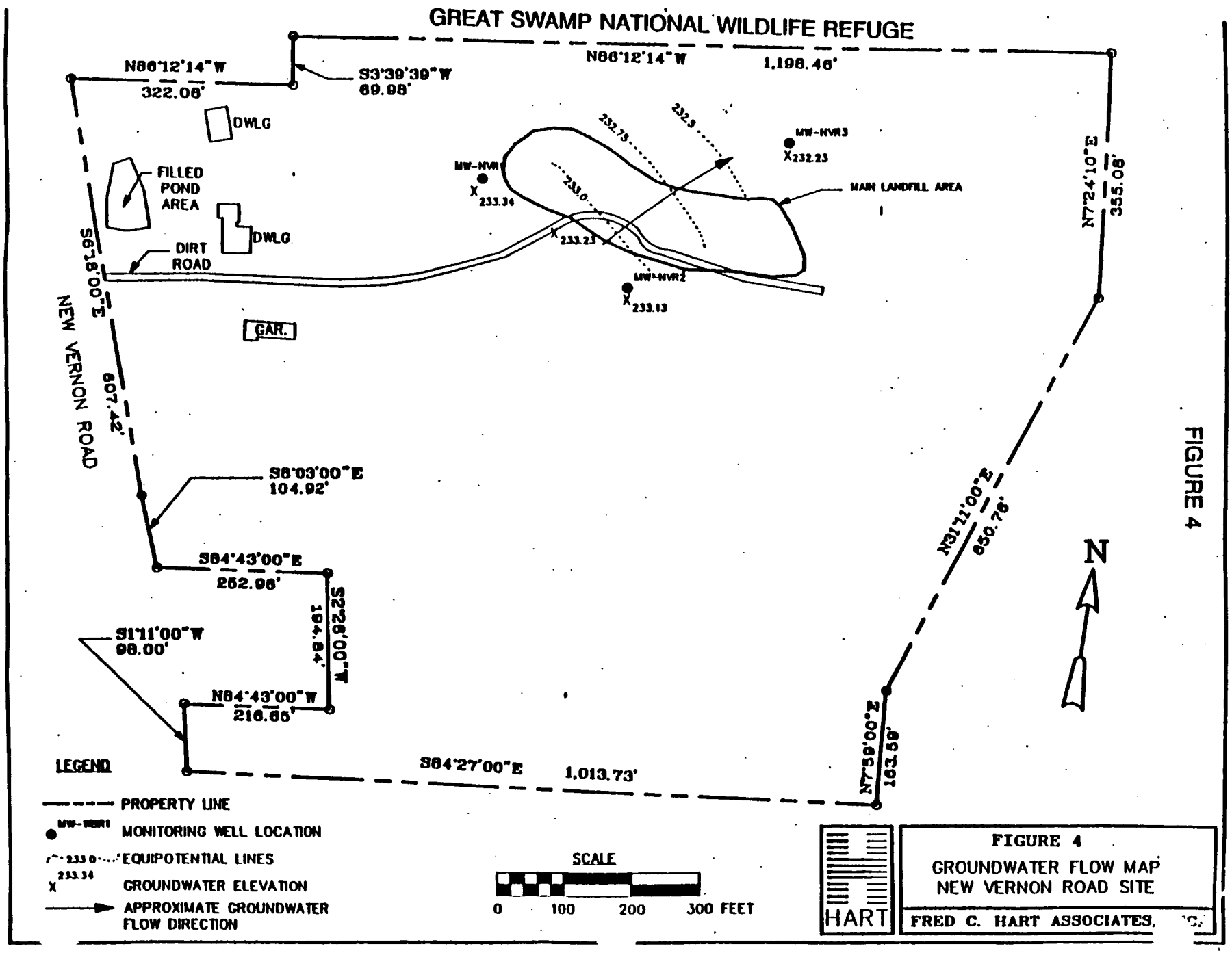
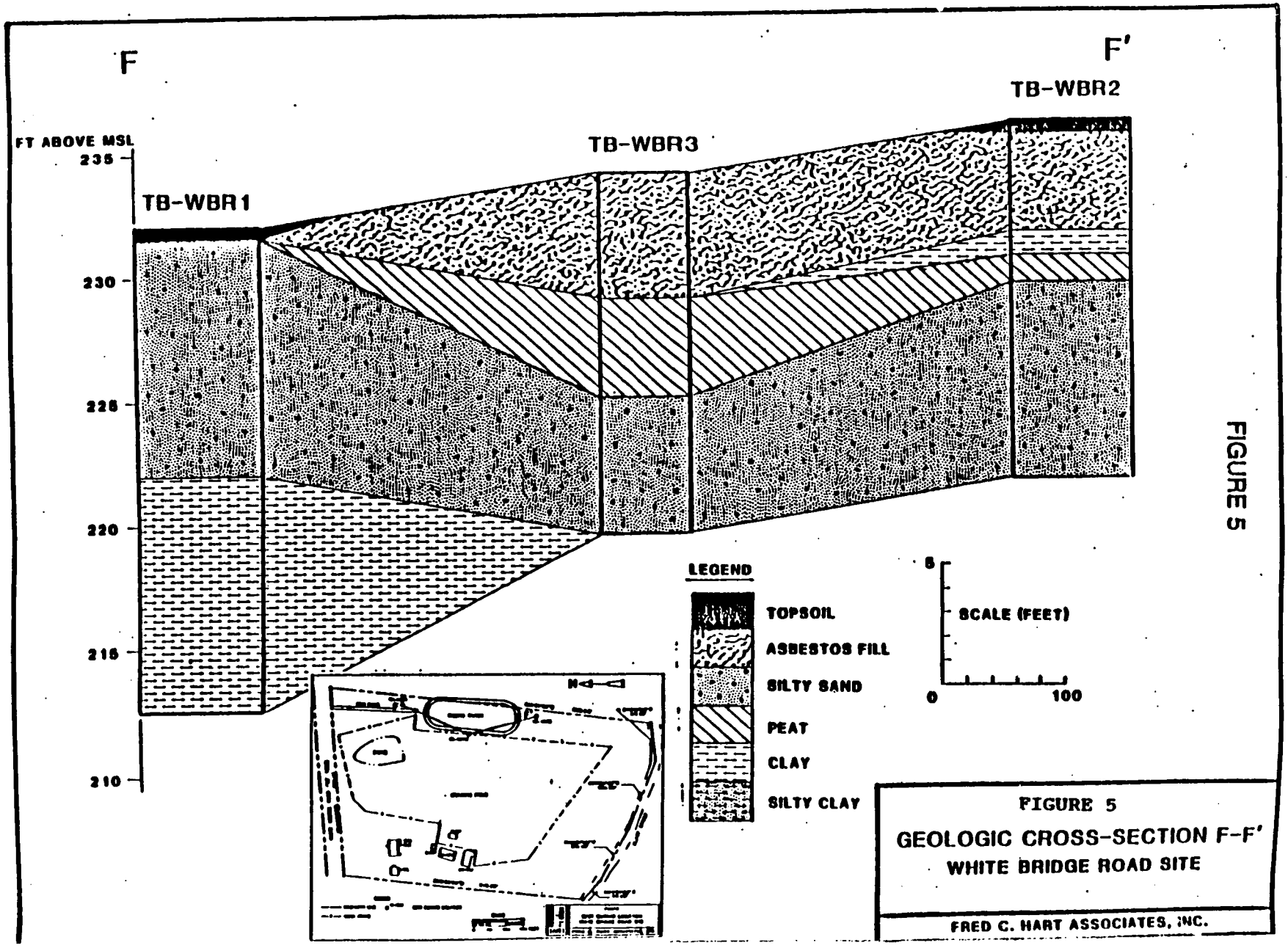
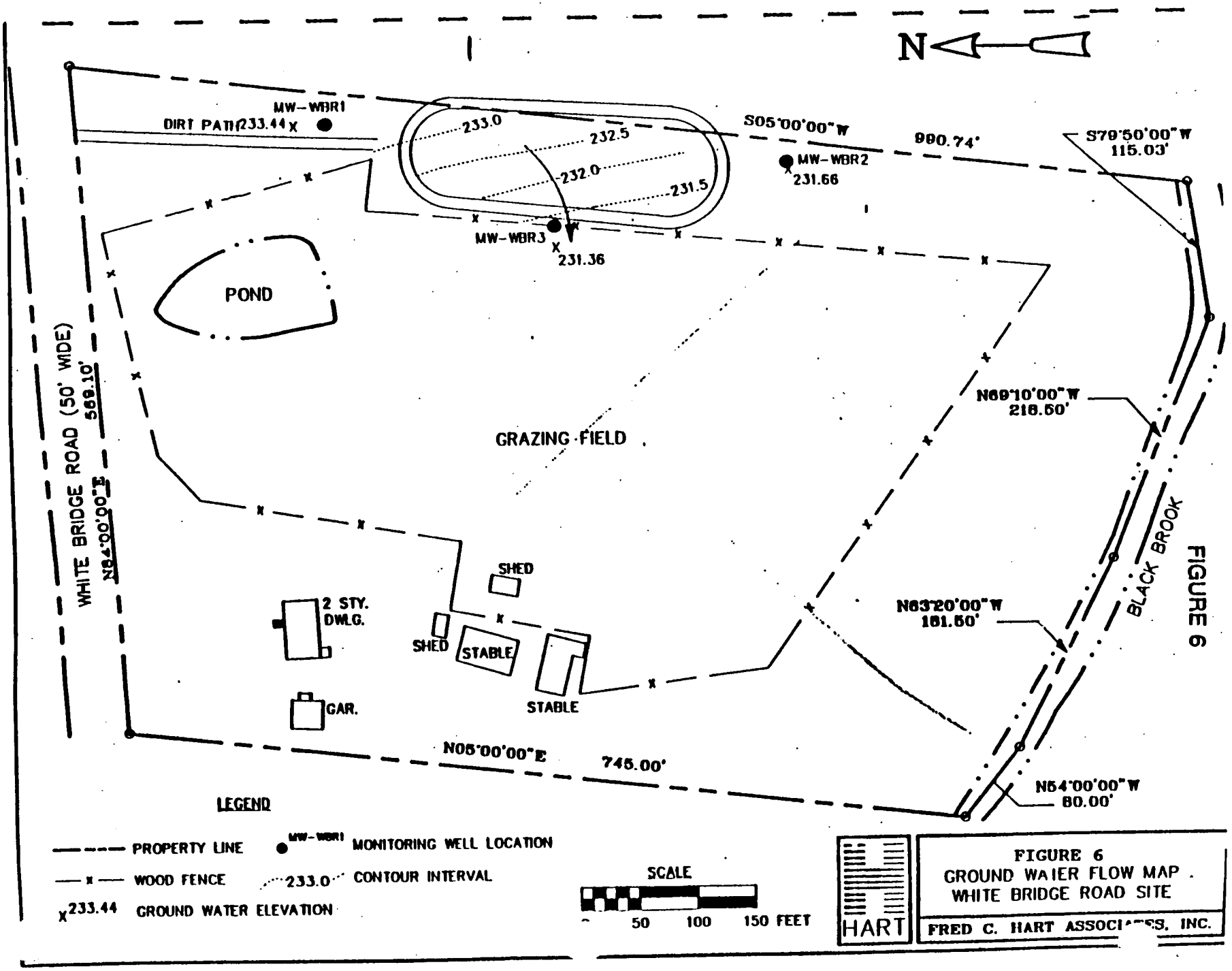

GREAT SWAMP NATIONAL WILDLIFE REFUGE
N86°12'14"W
322.08'
S3°39'39"W
69.98'
N86°12'14"W
1,198.46'
DWLG
FILLED POND AREA
DWLG
DIRT ROAD
S6°18'00"E
607.42'
NEW VERNON ROAD
GAR.
MW-NVR3
232.23
MW-NVR1
233.34
MW-NVR2
233.13
MAIN LANDFILL AREA
232.75
232.5
233.0
233.23
N7°24'10"E
355.08'
S8°03'00"E
104.92'
S84°43'00"E
252.96'
S22°00'00"W
194.84'
S1°11'00"W
98.00'
N84°43'00"W
216.65'
S84°27'00"E
1,013.73'
N31°11'00"E
650.78'
N7°38'00"E
183.59'
N
LEGEND
PROPERTY LINE
MONITORING WELL LOCATION
EQUIPOTENTIAL LINES
GROUNDWATER ELEVATION
APPROXIMATE GROUNDWATER FLOW DIRECTION
SCALE
0 100 200 300 FEET
HART
FIGURE 4
GROUNDWATER FLOW MAP
NEW VERNON ROAD SITE
FRED C. HART ASSOCIATES, P.C.

FIGURE 4


F
F'
TB-WBR1
TB-WBR2
TB-WBR3
FT ABOVE MSL
235
230
225
220
215
210
LEGEND
TOPSOIL
ASBESTOS FILL
SILTY SAND
PEAT
CLAY
SILTY CLAY
SCALE (FEET)
0
100
FIGURE 5
GEOLOGIC CROSS-SECTION F-F'
WHITE BRIDGE ROAD SITE
FRED C. HART ASSOCIATES, INC.


N
MW-WBR1
DIRT PATH
233.44
233.0
232.5
232.0
231.5
S05°00'00"W
990.74'
MW-WBR2
231.66
S79°50'00"W
115.03'
MW-WBR3
231.36
POND
WHITE BRIDGE ROAD (50' WIDE)
N84°00'00"E
566.10'
GRAZING FIELD
N69°10'00"W
218.50'
BLACK BROOK
N63°20'00"W
181.50'
SHED
2 STY.
DWLG.
SHED
STABLE
STABLE
GAR.
N05°00'00"E
745.00'
N54°00'00"W
80.00'
LEGEND
PROPERTY LINE
MW-WBR1 MONITORING WELL LOCATION
WOOD FENCE
233.0 CONTOUR INTERVAL
233.44 GROUND WATER ELEVATION
SCALE
50 100 150 FEET
HART
FIGURE 6
GROUND WATER FLOW MAP
WHITE BRIDGE ROAD SITE
FRED C. HART ASSOCIATES, INC.

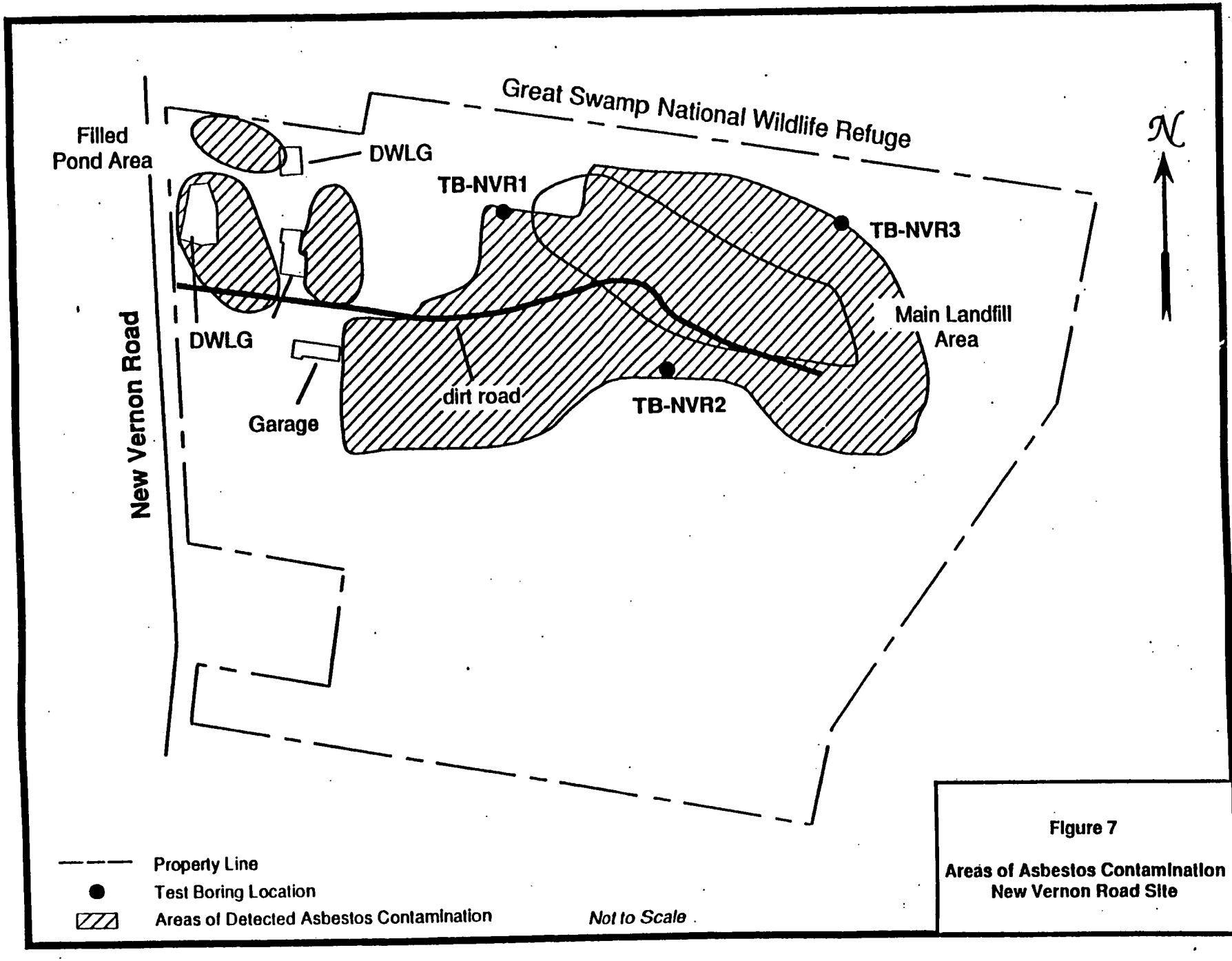

Great Swamp National Wildlife Refuge
Filled
Pond Area
DWLG
TB-NVR1
TB-NVR3
Main Landfill
Area
DWLG
New Vernon Road
Garage
dirt road
TB-NVR2
N
Property Line
Test Boring Location
Areas of Detected Asbestos Contamination
Not to Scale
Figure 7
Areas of Asbestos Contamination
New Vernon Road Site

Figure 7

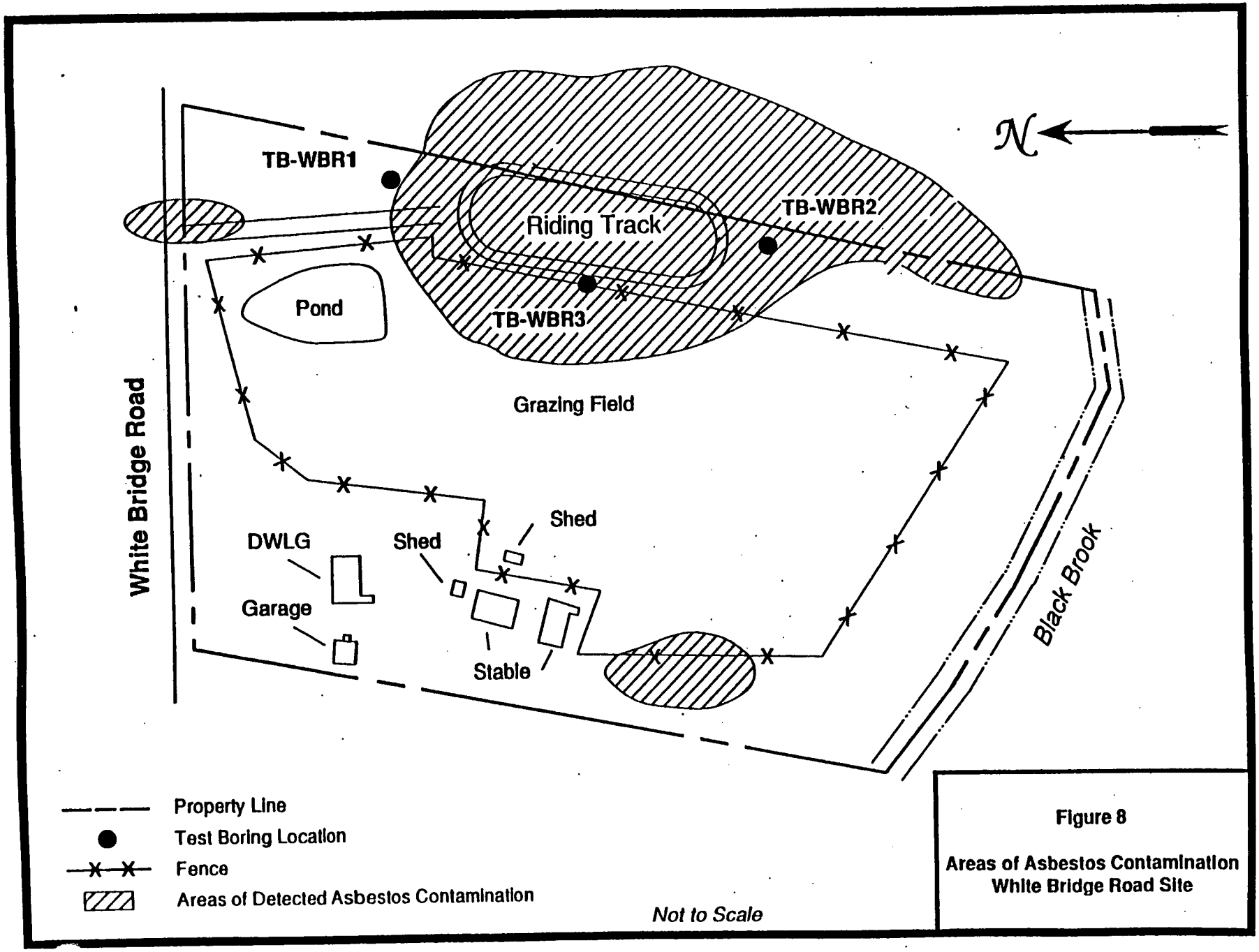

TB-WBR1
TB-WBR2
TB-WBR3
Riding Track
Pond
Grazing Field
White Bridge Road
Black Brook
DWLG
Shed
Shed
Garage
Stable
N
Property Line
Test Boring Location
Fence
Areas of Detected Asbestos Contamination
Not to Scale
Figure 8
Areas of Asbestos Contamination
White Bridge Road Site

Figure 8

TABLE 1

SUMMARY OF PRIORITY POLLUTANT DATA
TEST BORING SAMPLES
WHITE BRIDGE ROAD SITE

	Sample Number				
	WBR1		WBR2	WBR3	Trip Blank
	4	5**	10	18	9/24/86
Volatile Organics (ug/kg)					
Methylene Chloride	54B	59B	31B	29B	6B
Trichlorofluoromethane	—	—	3J	3J	—
Chloroform	2JB	2JB	10JB	7JB	2JB
Benzene	—	—	8JB	9JB	—
Toluene	2JB	2JB	8JB	7JB	—
Base Neutrals (ug/kg)					
Naphthalene	—	3J	—	—	
Diethyl phthalate	13JB	12JB	69JB	—	
Di-n-butyl phthalate	—	16S	—	2,700	
Bis-2-ethylhexyl phthalate	31J	—	—	—	
Phenols (mg/kg)	—	—	0.54	1.02	
Metals (mg/kg)					
Antimony	32N	19N	84N	70N	
Arsenic	6.4SN	[1.8]N	[5.0]N	—	
Beryllium	—	—	—	[1.0]N	
Cadmium	—	—	—	2.3N	
Chromium	18N	15N	111N	71N	
Copper	32*N	22*N	43*SN	16*N	
Lead	8.9*N	7.2*N	54*SN	3.2*N	
Mercury	—	—	1.16*	4.2*	
Nickel	32N	22N	271N	162N	
Zinc	57*N	43*N	115*N	107N	

TABLE 2

Analytical Results Survey—New Vernon Road

Grid Point	Sampling Date	Depth (Inches)	Analytical Technique		Comments
			TEM % Asbestos	PLM % Asbestos	
N 500 E 1100	-11/7-	6	0		
N 500 E 1200	-11/7-	6	0		
N 500 E 1300	-11/7-	6	0		
N 600 E 1100	-11/7-	6	0		
N 600 E 1200	-11/7-	6	0		
N 700 E 700	-11/6-	6	0		
N 700 E 800	-11/6-	6	0		
N 700 E 800	-11/6-	18	0		
N 700 E 900	-11/6-	6	0		
N 700 E 1000	-11/7-	6	0		
N 700 E 1100	-11/7 -	6	0		
N 700 E 1200	-11/7 -	6	0		
N 700 E 1400	-11/8-	6	0		Lab Duplicate
N 700 E 1400	-11/8-	6	0		Lab Duplicate
N 750 E 300	-11/5-	6 A	0		Field Duplicate
N 750 E 300	-11/5-	6 B	0		Field Duplicate
N 750 E 450	-11/5-	6	0		
N 800 E 250	-11/5-	6	0.007253		
N 800 E 362	-11/5-	6	0		
N 800 E 700	-11/6-	6	0		
N 800 E 800	-11/6-	6	0.000358		
N 800 E 900	-11/6-	6	0		
N 800 E 900	-11/6-	18	0		
N 800 E 1000	-11/7-	6	0		Lab Duplicate
N 800 E 1000	-11/7-	6	0		Lab Duplicate
N 800 E 1100	-11/7-	6 A	0		Field Duplicate
N 800 E 1100	-11/7-	6 A	0		Lab Duplicate
N 800 E 1100	-11/7-	6 B	0		Field Duplicate
N 800 E 1100	-11/7-	18 A	0		
N 800 E 1200	-11/7-	6	0		
N 800 E 1300	-11/7-	6	0		
N 800 E 1400	-11/8-	6	0		

PLM - Polarized Light Microscopy; TEM - Transmission Electron Microscopy

TEM Method detection limit is 0.5 %. PLM detection Limit is 1 %

ALLIANCE

TABLE 2 (continued)

Analytical Results Survey—New Vernon Road

Grid Point	Sampling Date	Depth (Inches)	Analytical Technique		Comments
			TEM % Asbestos	PLM % Asbestos	
N 800 E 1450	-11/8-	6	0		
N 822 E 600	-11/6-	6	0		
N 900 E 250	-11/5-	6	0.001381		
N 900 E 250	-11/5-	18	0		
N 900 E 300	-11/5-	6	0.00297		
N 900 E 350	-11/5-	6 A	0.000364		Field Duplicate
N 900 E 350	-11/5-	6 B	0.004047		Field Duplicate
N 900 E 350	-11/5-	18 A	0		
N 900 E 450	-11/5-	6	0.000917		
N 900 E 500	-11/13-	6	0.000598		Lab Duplicate
N 900 E 500	-11/13-	6	0		Lab Duplicate
N 900 E 550	-11/9-	6	0.001201		
N 900 E 600	-11/5-	6	0		
N 900 E 700	-11/6-	6 A	0		Field Duplicate
N 900 E 700	-11/6-	6 B	0		Field Duplicate
N 900 E 800	-11/6-	6	0		
N 900 E 800	-11/6-	18	0		
N 900 E 900	-11/6-	6	0		
N 900 E 1000	-11/6-	6	0		Lab Duplicate
N 900 E 1000	-11/6-	6	0		Lab Duplicate
N 900 E 1100	-11/7-	6	0		
N 900 E 1200	-11/7-	6 A	0		Field Duplicate
N 900 E 1200	-11/7-	6 B	0		Field Duplicate
N 900 E 1200	-11/7-	18 A	0		
N 900 E 1300	-11/7-	6	0		Lab Duplicate
N 900 E 1300	-11/7-	6	0.000858		Lab Duplicate
N 950 E 300	-11/6-	18	0		
N 950 E 400	-11/6-	18	0		
N 950 E 1450	-11/8-	6	0		
N 1000 E 250	-11/5-	6	0.000938		
N 1000 E 250	-11/5-	18	0		Lab Duplicate
N 1000 E 250	-11/5-	18	0		Lab Duplicate

PLM – Polarized Light Microscopy; TEM – Transmission Electron Microscopy
TEM Method detection limit is 0.5 %. PLM detection Limit is 1 %

ALLIANCE

TABLE 2 (continued)

Analytical Results Survey—New Vernon Road

Grid Point	Sampling Date	Depth (Inches)	Analytical Technique		Comments
			TEM % Asbestos	PLM % Asbestos	
N 1000 E 300	-11/5-	6	0.003281		
N 1000 E 350	-11/5-	6	0.005827		
N 1000 E 350	-11/5-	18	0		
N 1000 E 400	-11/6-	6	0		
N 1000 E 450	-11/5-	6	0		
N 1000 E 450	-11/5-	18	0		
N 1000 E 550	-11/8-	6		30	
N 1000 E 600	-11/5-	6	0.013651		
N 1000 E 600	-11/5-	18	1.05241		
N 1000 E 700	-11/5-	6	0		
N 1000 E 800	-11/6-	6	0		
N 1000 E 900	-11/6-	6	0.000235		
N 1000 E 1000	-11/6-	6	0.000190		
N 1000 E 1100	-11/6-	6	0.421462		
N 1000 E 1275	-11/7-	6	0.348931		
N 1000 E 1500	-11/8-	6	0		
N 1021 E 395	-11/9-	6	0		
N 1037 E 550	-11/8-	6 A		20	Field Duplicate
N 1037 E 550	-11/8-	6 B		20	Field Duplicate
N 1037 E 550	-11/8-	18 A	1.048996		
N 1050 E 300	-11/6-	18	0		
N 1050 E 1500	-11/8-	6	0		
N 1050 E 1550	-11/8-	6	0		
N 1062 E 429	-11/9-	6	0.000471		Lab Duplicate
N 1062 E 429	-11/9-	6	0		Lab Duplicate
N 1062 E 429	-11/9-	24	0		
N 1063 E 300	-11/9-	6	0		
N 1071 E 1100	-11/12-	6		10	
N 1095 E 300	-11/5-	6	0.030189		
N 1100 E 250	-11/5-	6 A	0.001021		
N 1100 E 250	-11/5-	18 A	0.000196		
N 1100 E 300	-11/5-	6	0.002288		

PLM – Polarized Light Microscopy; TEM – Transmission Electron Microscopy

TEM Method detection limit is 0.5 %. PLM detection Limit is 1 %

ALLIANCE

TABLE 2 (continued)

Analytical Results Survey—New Vernon Road

Grid Point	Sampling Date	Depth (inches)	Analytical Technique		Comments
			TEM % Asbestos	*PLM* % Asbestos	
N 1100 E 350	-11/5-	6	0		Lab Duplicate
N 1100 E 350	-11/5-	6	0		Lab Duplicate
N 1100 E 560	-11/9-	6		< 1	
N 1100 E 560	-11/9-	24	0.335926		
N 1100 E 600	-11/5-	6	0.288803		
N 1100 E 600	-11/9-	6		< 1	
N 1100 E 700	-11/9-	6 A		0	Field Duplicate
N 1100 E 700	-11/9-	6 B		0	Field Duplicate
N 1100 E 700	-11/9-	24 A	0		
N 1100 E 800	-11/6-	6		3	
N 1100 E 900	-11/6-	6		0	
N 1100 E 900	-11/6-	6 A		0	Field Duplicate
N 1100 E 900	-11/6-	6 B		< 1	Field Duplicate
N 1100 E 950	-11/12-	6		5	
N 1100 E 1250	-11/7-	6	0.002542		
N 1100 E 1500	-11/8-	6	0		Lab Duplicate
N 1100 E 1500	-11/8-	6	0		Lab Duplicate
N 1100 E 1500	-11/8-	18	0		Lab Duplicate
N 1100 E 1500	-11/8-	18	0		Lab Duplicate
N 1128 E 800	-11/12-	6 A		10	Field Duplicate
N 1128 E 800	-11/12-	6 B		5	Field Duplicate
N 1140 E 358	-11/6-	18	0.099888		
N 1150 E 207	-11/6-	6 A			Field Duplicate
N 1150 E 207	-11/6-	6 B			Field Duplicate
N 1150 E 207	-11/6-	18 A	0.01145		
N 1150 E 235	-11/9-	6	0		
N 1150 E 250	-11/9-	6	0		
N 1150 E 300	-11/6-	18	0.010848		
N 1150 E 300	-11/6-	6			
N 1150 E 450	-11/7-	6	0.032446		
N 1150 E 500	-11/5-	6	0		
N 1150 E 700	-11/12-	6		< 1	

PLM – Polarized Light Microscopy; TEM – Transmission Electron Microscopy
TEM Method detection limit is 0.5 %. PLM detection Limit is 1 %

ALLIANCE

TABLE 2 (continued)

Analytical Results Survey—New Vernon Road

Grid Point	Sampling Date	Depth (Inches)	Analytical Technique		Comments
			TEM % Asbestos	PLM % Asbestos	
N 1150 E 700	-11/12-	24	0		
N 1150 E 800	-11/6-	6		15	
N 1150 E 1550	-11/8-	6	0.001233		
N 1173 E 322	-11/8-	6		< 1	
N 1173 E 322	-11/8-	72	0		
N 1181 E 250	-11/8-	6		5	
N 1190 E 465	-11/7-	6	0		
N 1190 E 465	-11/7-	24	0.000351		
N 1190 E 1165	-11/12-	6		10	
N 1200 E 207	-11/8-	6 A	0.016912		Field Duplicate
N 1200 E 207	-11/8-	6 B	0.001853		Field Duplicate
N 1200 E 207	-11/8-	18 A	0		
N 1200 E 225	-11/13-	6	0.013128		
N 1200 E 250	-11/8-	6		0	
N 1200 E 293	-11/7-	6		< 1	
N 1200 E 293	-11/7-	72	0		
N 1200 E 300	-11/7-	6		0	
N 1200 E 425	-11/7-	6		< 1	Lab Duplicate
N 1200 E 425	-11/7-	6		0	Lab Duplicate
N 1200 E 600	-11/5-	6	0.000244		
N 1200 E 800	-11/6-	6	1.08794		
N 1200 E 1200	-11/7-	6	0.00241		Lab Duplicate
N 1200 E 1200	-11/7-	6	0		Lab Duplicate
N 1200 E 1292	-11/7-	6	0		
N 1224 E 320	-11/13-	6 A		0	Field Duplicate
N 1224 E 320	-11/13-	6 B		0	Field Duplicate
N 1238 E 1000	-11/12-	6		0	Lab Duplicate
N 1238 E 1000	-11/12-	6		0	Lab Duplicate
N 1250 E 208	-11/8-	6	0		
N 1250 E 225	-11/8-	6	0.002724		
N 1250 E 225	-11/8-	24	0.000974		
N 1250 E 250	-11/8-	6		20	Lab Duplicate

PLM – Polarized Light Microscopy; TEM – Transmission Electron Microscopy

TEM Method detection limit is 0.5 %. PLM detection Limit is 1 %

ALLIANCE

TABLE 2 (continued)

Analytical Results Survey—New Vernon Road

Grid Point	Sampling Date	Depth (inches)	Analytical Technique		Comments
			TEM % Asbestos	PLM % Asbestos	
N 1250 E 250	-11/8-	6		5	Lab Duplicate
N 1250 E 300	-11/7-	6	0		
N 1250 E 300	-11/7-	24	0.053087		Lab Duplicate
N 1250 E 300	-11/7-	24	0.000146		Lab Duplicate
N 1250 E 350	-11/6-	6	0		
N 1250 E 390	-11/7-	6	0		
N 1250 E 400	-11/6-	6	0.000481		
N 1250 E 450	-11/7-	6	0		
N 1250 E 450	-11/7-	24	0.000334		
N 1250 E 500	-11/5-	6	0		
N 1250 E 800	-11/12-	6	0		
N 1250 E 900	-11/12-	6		0	
N 1250 E 1550	-11/8-	6	0		
N 1300 E 206	-11/8-	6	0.00077		
N 1300 E 206	-11/8-	18	0		
N 1300 E 225	-11/8-	6	0.00182		
N 1300 E 250	-11/8-	6	0		
N 1300 E 300	-11/6-	6	0		Lab Duplicate
N 1300 E 300	-11/6-	6	0		Lab Duplicate
N 1300 E 300	-11/7-	6	0		Rig
N 1300 E 327	-11/13-	6	0		
N 1300 E 350	-11/6-	6	0		Lab Duplicate
N 1300 E 350	-11/6-	6	0		Lab Duplicate
N 1300 E 400	-11/7-	6	0.017067		
N 1300 E 400	-11/7-	48	0		
N 1300 E 462	-11/7-	6	0.000127		
N 1300 E 600	-11/5-	6	0.000448		Lab Duplicate
N 1300 E 600	-11/5-	6	0		Lab Duplicate
N 1300 E 1100	-11/7-	6	0		
N 1300 E 1200	-11/7-	6	0.000209		
N 1300 E 1200	-11/7-	18	0		
N 1300 E 1300	-11/7-	6	0		

PLM – Polarized Light Microscopy; TEM – Transmission Electron Microscopy
TEM Method detection limit is 0.5 %. PLM detection Limit is 1 %

TABLE 2 (continued)

Analytical Results Survey—New Vernon Road

Grid Point	Sampling Date	Depth (Inches)	Analytical Technique		Comments
			TEM % Asbestos	*PLM* % Asbestos	
N 1300 E 1500	-11/8-	6	0		
N 1300 E 1550	-11/8-	6	0		
N 1300 E 1600	-11/8-	6	0		
N 1327 E 379	-11/7-	6	0		
N 1327 E 379	-11/7-	24	0.001345		
N 1338 E 350	-11/7-	6	0		
N 1350 E 210	-11/8-	6	0.00325		
N 1350 E 225	-11/8-	6	0.003841		
N 1350 E 250	-11/8-	6		0	
N 1350 E 300	-11/7-	6	0		
N 1350 E 400	-11/6-	6	0		
N 1350 E 466	-11/7-	6	0		
N 1350 E 466	-11/7-	24	0		
N 1352 E 1300	-11/7-	6	0		
N 1375 E 1100	-11/7-	6	0		
N 1375 E 1200	-11/7-	6	0		
N 1400 E 225	-11/8-	6	0.000471		
N 1400 E 225	-11/8-	24	0		
N 1400 E 250	-11/8-	6	0.001234		
N 1400 E 341	-11/7-	6	0.000741		
N 1400 E 341	-11/7-	24	0		
N 1400 E 419	-11/7-	6	0		
N 1400 E 900	-11/12-	6		0	
N 1400 E 1000	-11/7-	6	0		
N 1410 E 510	-11/7-	6	0.013299		
N 1415 E 231	-11/8-	6	0.002298		
N 1415 E 231	-11/8-	24	0.001940		
N 1419 E 300	-11/7-	6		0	
N 1420 E 450	-11/6-	6	0.000414		
N 1425 E 250	-11/8-	6		< 1	
N 1425 E 400	-11/6-	6	0.003126		

PLM – Polarized Light Microscopy; TEM – Transmission Electron Microscopy
TEM Method detection limit is 0.5 %. PLM detection Limit is 1 %

ALLIANCE

TABLE 2 (continued)

Analytical Results Survey—New Vernon Road

Grid Point	Sampling Date	Depth (inches)	Analytical Technique		Comments
			TEM % Asbestos	*PLM* % Asbestos	
N 1440 E 300	-11/6-	6	0.088587		
N 1445 E 695	-11/7-	6	0		Lab Duplicate
N 1445 E 695	-11/7-	6	0		Lab Duplicate
N 1450 E 250	-11/6-	6		< 1	
N 1450 E 600	-11/7-	6	0		Lab Duplicate
N 1450 E 600	-11/7-	6	0		Lab Duplicate
UNKNOWN - 1	-11/7-	6		20	
UNKNOWN - 2	-11/9-	6		50	Lab Duplicate
UNKNOWN - 2	-11/9-	6		40	Lab Duplicate
UNKNOWN - 3 -	-11/12-	6		0	
Total Number of Analyses			*TEM* 189	*PLM* 41	

PLM - Polarized Light Microscopy; TEM - Transmission Electron Microscopy
TEM Method detection limit is 0.5 %. PLM detection Limit is 1 %

ALLIANCE

TABLE 3

SUMMARY OF PRIORITY POLLUTANT DATA
TEST BORING SAMPLES
WHITE BRIDGE ROAD SITE

	Sample Number				
	WBR1		WBR2	WBR3	Trip Blank
	4	5**	10	18	9/24/86
Volatile Organics (ug/kg)					
Methylene Chloride	54B	59B	31B	29B	6B
Trichlorofluoromethane	—	—	3J	3J	—
Chloroform	2JB	2JB	10JB	7JB	2JB
Benzene	—	—	8JB	9JB	—
Toluene	2JB	2JB	8JB	7JB	—
Base Neutrals (ug/kg)					
Naphthalene	—	3J	—	—	
Diethyl phthalate	13JB	12JB	69JB	—	
Di-n-butyl phthalate	—	16S	—	2,700	
Bis-2-ethylhexyl phthalate	31J	—	—	—	
Phenols (mg/kg)	—	—	0.54	1.02	
Metals (mg/kg)					
Antimony	32N	19N	84N	70N	
Arsenic	6.4SN	[1.8]N	[5.0]N	—	
Beryllium	—	—	—	[1.0]N	
Cadmium	—	—	—	2.3N	
Chromium	18N	15N	111N	71N	
Copper	32*N	22*N	43*SN	16*N	
Lead	8.9*N	7.2*N	54*SN	3.2*N	
Mercury	—	—	1.16*	4.2*	
Nickel	32N	22N	271N	162N	
Zinc	57*N	43*N	115*N	107N	

TABLE 4

ANALYTICAL RESULTS SUMMARY - WHITE BRIDGE ROAD

Grid Point	Sampling Date	Depth (inches)	Analytical Technique		Comments
			TEM % Asbestos	PLM % Asbestos	
N 600 E 500	-10/31-	6	0		
N 600 E 550	-10/31-	6	0		
N 600 E 600	-11/1-	6	0.002181		
N 600 E 600	-11/1-	18	0		
N 650 E 450	-10/31-	6	0		
N 650 E 500	-10/31-	6	0		Lab duplicate
N 650 E 500	-10/31-	6	0.000270		Lab duplicate
N 650 E 500	-10/31-	18	0		
N 650 E 550	-10/31-	6	0		
N 650 E 600	-11/1-	6 A	1.060388	< 1.0	
N 650 E 600	-11/1-	6 B		< 1.0	Lab duplicate
N 650 E 600	-11/1-	6 B		< 1.0	Lab duplicate
N 650 E 650	-11/1-	6	0		
N 700 E 450	-10/31-	6	0		
N 700 E 550	-11/2-	6		10.0	
N 700 E 650	-11/1-	6	0		
N 750 E 400	-10/31-	6	0.015706		
N 750 E 400	-10/31-	18	0.003578		Lab duplicate
N 750 E 400	-10/31-	18	0.016831		Lab duplicate
N 750 E 500	-10/31-	6	0.001113		
N 750 E 500	-10/31-	18	0		
N 750 E 600	-11/2-	6	0.163962		
N 750 E 600	-11/2-	48	0		Lab duplicate
N 750 E 600	-11/2-	48	0		Lab duplicate
N 750 E 750	-11/1-	6	0		
N 800 E 300	-10/31-	6	0		Lab duplicate
N 800 E 300	-10/31-	6	0		Lab duplicate
N 800 E 400	-10/31-	6	0.003776		
N 800 E 500	-10/31-	6 A		0.0	Field/Lab duplicate
N 800 E 500	-10/31-	6 A		< 1.0	Lab duplicate
N 800 E 500	-10/31-	6 B		< 1.0	Field duplicate
N 850 E 150	-10/31-	6	0.001789		
N 850 E 150	-10/31-	18	0.000673		
N 850 E 300	-10/31-	6	0		

PLM – Polarized Light Microscopy; TEM – Transmission Electron Microscopy

TEM method detection limit is 0.5 %. PLM detection Limit is 1 %.

ALLIANCE

TABLE 4 (continued)

Grid Point	Sampling Date	Depth (Inches)	Analytical Technique		Comments
			TEM % Asbestos	PLM % Asbestos	
N 850 E 500	-10/31-	6	0.000299		
N 850 E 500	-10/31-	18	0		
N 850 E 550	-11/2-	6		0.0	
N 850 E 600	-11/2-	6	0.330782	< 1.0	
N 850 E 750	-11/1-	6	0		Lab Duplicate
N 850 E 750	-11/1-	6	0.000408		Lab Duplicate
N 850 E 750	-11/1-	18	0		
N 900 E 100	-10/31-	6	0.001116		
N 900 E 100	-10/31-	18	0		
N 900 E 150	-10/31-	6		20.0	
N 900 E 300	-10/31-	6 A	0.000612		Field duplicate
N 900 E 300	-10/31-	6 B	0.003081		Field duplicate
N 900 E 300	-10/31-	18 A	0		
N 900 E 400	-10/31-	6	0.000572		
N 900 E 400	-10/31-	18	0		
N 900 E 500	-10/31-	6	0		
N 900 E 550	-10/31-	6		0.0	
N 900 E 650	-11/2-	6		15.0	
N 950 E 100	-10/31-	6	0.001961		
N 950 E 100	-10/31-	18	0.001087		
N 950 E 200	-10/31-	6	0		
N 950 E 500	-10/31-	6	0		
N 950 E 800	-11/1-	6 A	0		Field Duplicate
N 950 E 800	-11/1-	6 B	0		Field Duplicate
N1000 E 150	-10/31-	6		5.0	
N1000 E 200	-10/31-	6	0.003483		
N1000 E 200	-10/31-	18	0		
N1000 E 250	-10/31-	6	0.000646		
N1000 E 350	-10/31-	6	0.000193		Lab duplicate
N1000 E 350	-10/31-	6	0.003162		Lab duplicate
N1000 E 350	-10/31-	18	0		
N1000 E 400	-10/31-	6	0		
N1000 E 500	-10/31-	6	0.000285		
N1000 E 550	-10/31-	6		5.0	

PLM – Polarized Light Microscopy; TEM – Transmission Electron Microscopy
TEM method detection limit is 0.5 %. PLM detection Limit is 1 %.

TABLE 4 (continued)

Grid Point	Sampling Date	Depth (inches)	Analytical Technique		Comments
			TEM % Asbestos	PLM % Asbestos	
N1050 E 450	-10/30-	6	0		
N1050 E 500	-10/30-	6		0.0	
N1050 E 550	-11/1-	6		0.0	
N1050 E 800	-11/1-	6	0		
N1100 E 100	-10/31-	6	0.000204		Lab duplicate
N1100 E 100	-10/31-	6	0		Lab duplicate
N1100 E 150	-10/31-	6	0.034650		
N1100 E 150	-10/31-	18	0.000493		
N1100 E 200	-10/31-	6	0.000405		
N1100 E 200	-10/31-	18	0		
N1100 E 300	-10/30-	6	0.001695		Field Duplicate
N1100 E 300	-10/31-	6	0.006048		Field Duplicate
N1100 E 300	-10/30-	18	0		Field Duplicate
N1100 E 300	-10/31-	18	0		Field Duplicate
N1100 E 350	-10/30-	6	0.027969		
N1100 E 350	-10/30-	18	0.000283		
N1100 E 400	-10/30-	6	0.002123		
N1100 E 400	-10/30-	18	0		
N1100 E 450	-10/30-	6	0.000387		
N1100 E 450	-10/30-	18	0		
N1100 E 500	-10/30-	6	0		
N1100 E 550	-10/30-	6	0.546812		
N1100 E 550	-10/30-	18	0.434025		
N1100 E 600	-11/1-	6		5.0	
N1100 E 650	-11/2-	6		0.0	
N1100 E 650	-11/2-	24		20.0	
N1100 E 700	-11/1-	6		5.0	
N1100 E 750	-11/2-	6	0.043027		
N1100 E 750	-11/2-	24	0.017218		Lab duplicate
N1100 E 750	-11/2-	24	0.005544		Lab duplicate
N1100 E 750	-11/2-	96	0.043027		
N1100 E 800	-11/2-	6	0		
N1150 E 350	-10/29-	6	0.000315		
N1150 E 400	-10/29-	6	0		

PLM – Polarized Light Microscopy; TEM – Transmission Electron Microscopy
TEM method detection limit is 0.5 %. PLM detection Limit is 1 %.

TABLE 4 (continued)

Grid Point	Sampling Date	Depth (inches)	Analytical Technique		Comments
			TEM % Asbestos	PLM % Asbestos	
N1150 E 400	-10/29-	18	0		Lab duplicate
N1150 E 400	-10/29-	18	0		Lab duplicate
N1150 E 450	-10/29-	6	0		
N1150 E 450	-10/29-	18	0		
N1150 E 500	-10/29-	6	0.000868		
N1150 E 550	-10/30-	6	0.011684		
N1150 E 800	-11/1-	6	0		
N1200 E 100	-10/31-	6	0		
N1200 E 100	-10/31-	18	0		
N1200 E 150	-10/31-	6 A	0		
N1200 E 350	-10/29-	6 A	0		Lab duplicate
N1200 E 350	-10/29-	6 A	0		Lab duplicate
N1200 E 350	-10/29-	18 A	0		
N1200 E 350	-10/29-	18 B	0.000371		Field duplicate
N1200 E 350	-10/29-	36 B	0		
N1200 E 400	-10/29-	6 A	0.001021		
N1200 E 450	-10/29-	6	0		
N1200 E 450	-10/29-	18	0.000306		
N1200 E 450	-10/29-	36	0		Lab duplicate
N1200 E 450	-10/29-	36	0		Lab duplicate
N1200 E 500	-10/29-	6 A	0		Field duplicate
N1200 E 500	-10/29-	18 A	0		Field duplicate
N1200 E 500	-10/29-	6 B	0		Field duplicate
N1200 E 500	-10/29-	18 B	0		Field duplicate
N1200 E 550	-10/30-	6 A	0		
N1200 E 550	-10/30-	18 A	0		
N1200 E 550	-10/30-	18 B	0		
N1200 E 650	-11/2-	24		5.0	Lab duplicate
N1200 E 650	-11/2-	24		4.0	Lab duplicate
N1200 E 700	-11/1-	6		15.0	
N1200 E 750	-11/1-	6	0.000374		
N1200 E 750	-11/1-	18	0		
N1217 E 587	-10/30-	6	0.037740	< 1.0	
N1250 E 250	-10/30-	6		0.0	
N1250 E 300	-10/30-	6	0.006313		

PLM – Polarized Light Microscopy; TEM – Transmission Electron Microscopy
TEM method detection limit is 0.5 %. PLM detection Limit is 1 %.

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TABLE 4 (continued)

Grid Point	Sampling Date	Depth (Inches)	Analytical Technique		Comments
			TEM % Asbestos	PLM % Asbestos	
N1350 E 800	-11/1-	6	0		
N1400 E 250	-10/30-	6	0.001273		
N1400 E 250	-10/30-	18	0		
N1400 E 300	-10/30-	6	0		
N1400 E 300	-10/30-	18	0		
N1400 E 350	-10/30-	6	0.000376		
N1400 E 350	-10/30-	18	0		
N1400 E 400	-10/30-	6 A	0		Field duplicate
N1400 E 400	-10/30-	6 B	0		Field duplicate
N1400 E 400	-10/30-	18 A	0		Field duplicate
N1400 E 400	-10/30-	18 B	0		Field duplicate
N1400 E 450	-10/30-	6	0		
N1400 E 450	-10/30-	18	0		
N1400 E 500	-10/30-	6	0		
N1400 E 500	-10/30-	18	0		
N1400 E 600	-10/30-	6	0		Lab duplicate
N1400 E 600	-10/30-	6	0.000229		Lab duplicate
N1400 E 600	-10/30-	18	0		
N1400 E 650	-10/30-	6	0.479973	< 1.0	
N1450 E 250	-10/30-	6	0.095782	< 1.0	
N1450 E 450	-10/30-	6	0		
N1450 E 450	-10/30-	18	0		Lab duplicate
N1450 E 450	-10/30-	18	0		Lab duplicate
N1450 E 500	-10/30-	6	0.000377		
N1450 E 550	-10/30-	6	0.000666		
N1450 E 600	-10/30-	6	0		Lab duplicate
N1450 E 600	-10/30-	6	0		Lab duplicate
N1450 E 600	-10/30-	18	0		
N1450 E 650	-11/1-	6	0.971433	< 1.0	
N1450 E 700	-11/1-	6	0.000347		
N1450 E 700	-11/1-	18	0		
Total Number of Analyses			*TEM* 176	*PLM* 33	

PLM – Polarized Light Microscopy; TEM – Transmission Electron Microscopy
TEM method detection limit is 0.5 %. PLM detection Limit is 1 %.

TABLE 5

SUMMARY OF PRIORITY POLLUTANT DATA

NEW VERNON ROAD SITE
GROUNDWATER MONITORING WELL SAMPLES

	Sample Number				
Volatile Organics (ug/l)	NVR1	NVR2	NVR3	TB (10/15/87)	TB (10/16/86)
Methylene chloride	6B	36B	13B	13B	12B
Trichlorofluoromethane	—	—	0.4J	—	0.5J
Chloroform	2B	2JB	7B	5B	4JB
Trichloroethene	—	—	—	—	0.9J
1,1,2,2-Tetrachloroethane	—	2J	1JB	3J	—
Ethyl Benzene	—	0.9JB	1J	—	0.9J
Base Neutrals (ug/l)					
Diethyl Phthalate	—	0.4J	—		
Di-n-octyl phthalate	15	5J	6J		
Metals (ug/l)					
Chromium	—	35	31		
Mercury	4.5	—	—		
Zinc	71	638	554		
Phenols (ug/l)	130	—	—		

— Indicates compound was analyzed for but not detected.
J Indicates that the compound was analyzed for and determined to be present in the sample. The mass specturm of the compound meets the identificaton criteria of the method. The concentrarion listed is an estimated value, which is less than the specified minimum lower limit but is greater than zero.
B Analyte was found in method blank as well as in sample.
Blank space indicates that the sample was not anayzed for that parameter.
TB Trip Blank

TABLE 6

SUMMARY OF PRIORITY POLLUTANT DATA

WHITE BRIDGE ROAD SITE
GROUNDWATER MONITORING WELL SAMPLES

	Sample Number			
Volatile Organics (ug/l)	WBR1	WBR2	WBR3	TB (10/15/86)
Methylene chloride	6B	—	6B	13B
Chloroform	2JB	—	2JB	5B
1,1,2,2-Tetrachloroethane	—	—	—	3J
Base Neutrals (ug/l)				
Bis-2-ethylhexylphthalate	—	21B	—	
Di-n-octyl phthalate	15	27	127	
Metals (ug/l)				
Copper	—	—	23	
Silver	17	—	—	
Zinc	371	78	128	
Phenols (ug/l)	49	45	85	

— Indicates compound was analyzed for but not detected.
J Indicates that the concentration listed is an estimated value, which is less than the specified minimum lower limit but greater than zero.
B Analyte was found in the method blank as well as in the sample.
Blank space indicates that the sample was not analyzed for that parameter.
TB Trip Blank

TABLE 7

GROUNDWATER ASBESTOS DATA

	Monitoring Well	Content Asbestos Fibers (>5 microns) Per liter
Millington Site		
	901	<100,000
	902	<100,000
	903	<100,000
	904	<100,000
	905	<100,000
	906	<100,000
	907	<100,000
	908	<100,000
Great Swamp Site		
	GS1	<100,000
	GS2	130,000
	GS3	120,000
	GS4	<100,000
	GS5	<100,000
	GS6	<100,000
	GS7	<100,000
	GS8	<100,000
	GS9	<100,000
	GS10	390,000
	GS11	<100,000
New Vernon Road Site		
	NVR1	<100,000
	NVR2	<100,000
	NVR3	<100,000
White Bridge Road Site		
	WBR1	<100,000
	WBR2	<100,000
	WBR3	<100,000
	Field Blank 1	<100,000
	Method Detection Limit	100,000

TABLE 8

SUMMARY OF PRIORITY POLLUTANT DATA
NEW VERNON ROAD SITE
SURFACE WATER

	SW-18	SW-19	TB-1 (2811)	TB-2 (2527)	TB-3 (2808)	TB-4 (2556)	TB-5 (2558)	FB-2 (2276)
Volatile Organics (ug/l)								
Methylene chloride	—	—	4JB	4JB	—	—	6B	38B
Base Neutral Extractables (ug/l)								
Diethyl phthalate	1J	—						1J
Di-n-butyl phthalate	—	3J						—
Butylbenzyl phthalate	—	17						—
Phenols (ug/l)	—	23						32
Metals (ug/l)								
Cadmium	7	28						—
Chromium	11	—						—
Copper	21	247						—
Lead	18S	570S						—
Mercury	—	0.3						—
Nickel	98	140						88
Zinc	98	1530						—

— Indicates compound was analyzed for but not detected.
J Indicates that the concentration listed is an estimated value which is less than the specified minimum lower limit but is greater than zero.
B Analyte was found in the method blank as well as in the sample.
S Indicates value determined by Method of Standard Addition.
Blank spaces indicate that the sample was not analyzed for those parameters.
TB Trip Blank
FB Field Blank

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TABLE 9

SUMMARY OF PRIORITY POLLUTANT DATA
NEW VERNON ROAD SITE
SEDIMENT SAMPLES

	SED-13	SED-14	FB-1 (2526)	TB-2 (2527)	TB-4 (2556)	TB-5 (2558)
Volatile Organics (ug/kg)						
Methylene Chloride	2JB	3JB	4JB	4JB	—	6B
Chloroform	3JB	5B	—	—	—	—
Toluene	2JB	3JB	—	—	—	—
Base Neutrals (ug/kg)						
Naphthalene	5J	17J	—			
Diethyl phthalate	64J	92J	2JB			
Phenanthrene	—	450	—			
Fluoroanthrene	—	550	—			
Pyrene	79J	1100	—			
Benzo(b)fluoranthene	—	1000	—			
Benzo(a)pyrene	60J	—	—			
Di-n-butyl phthalate	—	—	0.6JB			
Phenols (mg/kg)	—	1.0	20			
Pesticides/PCBs (ug/kg)						
Beta-BHC	19	—	—			
Metals (mg/kg)						
Chromium	18.4	2.6	—			
Copper	17.6*	41.1*	—			
Lead	15.1R	67.4R	—			
Mercury	—	0.13	—			
Nickel	12.9*	15.6*	—			
Zinc	48.8	98.7	126			

- — Indicates compound was analyzed for but not detected.
- J Indicates that the compound was analyzed for and determined to be present in the sample. The mass spectrum of the compound meets the identification criteria of the method. The concentration listed is an estimated value, which is less than the specified minimum lower limit but is greater than zero.
- B Analyte was found in the method blank as well as in the sample.
- * Indicates duplicate analysis is not within control limits.
- R Indicates spike sample recovery is not within control limits.
- FB Field Blank
- TB Trip Blank

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TABLE 10

SUMMARY OF PRIORITY POLLUTANT DATA
SURFACE WATER
WHITE BRIDGE ROAD SITE

	SW-16	SW-17	SW-21	TB-1 (2811)	TB-2 (2527)	TB-3 (2808)	TB-4 (2556)	TB-5 (2558)	FB-2 (2276)
Volatile Organics (ug/l)									
Methylene chloride	—	—	—	4JB	4JB	—	—	6B	38B
Base Neutral Extractables (ug/l)									
Diethyl phthalate	—	1J	—						1J
Di-n-butyl phthalate	2J	1J	—						—
Butylbenzyl phthalate	5J	—	1J						—
Bis-2-ethylhexul phthalate	55J	13	21						—
Phenols (ug/l)	—	—	—						32
Metals (ug/l)									
Lead	6.9	—	—						—
Mercury	—	—	0.54						—
Nickel	—	—	53N						88
Zinc	—	34	—						—

— Indicates compound was analyzed for but not detected.
J Indicates that the concentration listed is an estimated value which is less than the specified minimum lower limit but is greater than zero.
B Analyte was found in the method blank as well as in the sample.
S Indicates value determined by method of standard addition.
Blank spaces indicate that the sample was not analyzed for those parameters.
N Indicates spike recovery is not within control limits.
TB Trip Blank
FB Field Blank or Rinse Blank

ALLIANCE
Technologies Corporation

TABLE 11

SUMMARY OF PRIORITY POLLUTANT DATA
SEDIMENT SAMPLES
WHITE BRIDGE ROAD SITE

	SED-11	SED-12	SED-15	FB-1 (2526)	TB-2 (2527)	TB-4 (2556)	TB-5 (2558)
Volatile Organics (ug/kg)							
Methylene chloride	—	4JB	39B	4JB	4JB	—	6B
Trichlorofluoromethane	3JB	—	—	—	—	—	—
Chloroform	10B	2JB	11B	—	—	—	—
Toluene	6JB	2JB	6JB	—	—	—	—
Base Neutrals (ug/kg)							
Naphthalene	18J	24000	—	—			
Acenaphthylene	—	630	—	—			
Acenaphthene	—	6000	—	—			
Diethyl phthalate	140J	—	—	2JB			
Fluorene	—	10000	—	—			
Phenanthrene	—	53000	190J	—			
Anthracene	—	9500	—	—			
Di-n-butyl phthalate	—	—	—	0.6J			
Fluoranthene	—	52000	190J	—			
Pyrene	—	62000	200J	—			
Chrysene	—	24000	—	—			
Benzo(a)anthracene	—	24000	—	—			
Benzo(b)fluoranthene	—	31000	—	—			
Benzo(k)fluoranthene	—	3700	370J	—			
Benzo(a)pyrene	—	18000	—	—			
Benzo(g,h,i)perylene	—	11000	—	—			
Ideno(1,2,3,c,d)pyrene	—	8300	—	—			
Phenols (mg/kg)	3.7	—	0.6	20			

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TABLE 11 (continued)

	SED-11	SED-12	SED-15	FB-1 (2526)	TB-2 (2527)	TB-4 (2556)	TB-5 (2558)
Metals (mg/kg)							
Arsenic	—	—	—	—			
Chromium	11.5	17.3	8.87	—			
Copper	14.9*	43.5*	—	—			
Lead	34.4R	1480R	16.4R	—			
Mercury	—	—	—	—			
Nickel	9.62*	15.4*	—	—			
Silver	—	2.96	—	—			
Zinc	44.1	104	21.3	126			

-- Indicates compound was analyzed for but not detected.

J Indicates that the compound was analyzed for and determined to be present in the sample. The mass spectrum of the compound meets the identification criteria of the method. The concentration listed is an estimated value, which is less than the specified minimum lower limit but is greater than zero.

B Analyte was found in method blank as well as in sample.

R Indicates spike samples recovery is not within control limits.

* Indicates duplicate analysis is not within control limits.

Blank space indicates that the sample was not analyzed for that parameter.

FB Field Blank or Rinse Blank

TB Trip Blank

TABLE 12

SUMMARY OF ASBESTOS DATA

NEW VERNON ROAD SITE
SURFACE WATER

CONCENTRATIONS (fibers/liter)

SW-18 (up gradient)	ND*
SW-19 (down gradient)	3,200,000

* The detection limit of this sample was 200,000 fiber/liter.

TABLE 13 - SUMMARY OF ASBESTOS DATA

WHITE BRIDGE ROAD SITE
SURFACE WATER

	CONCENTRATIONS (fibers/liter)
SW-16 (up gradient)	1,000,000
SW-17 (down gradient)	2,000,000
SW-21 (downgradient)	300,000

TABLE 14 (continued)

Air Monitoring Results at the New Vernon Road Site

Date	Type of Sample	Sample I.D.	Sample Location	Sampling Period	Volume Collected *(liters)*	Fiber Load *(per sq. mm)*	Concentration *(fibers/cc)*
Nov. 5	Area	AMB-11/5-UP	Upwind	1135 - 1633	524	2.546	0.002
		AMB-11/5-DN	Downwind	1329 - 1639	1662	3.820	0.001
	Personal	AMB-11/5-01	Rick R.	1335 - 1645	298	0.000	<0.0016
		AMB-11/5-01 (Dup.)	Rick R.	1335 - 1645	298	0.000	<0.0016
		AMB-11/5-FB1	Field Blank	NA	0	0.000	(a)
		AMB-11/5-FB2	Field Blank	NA	0	0.000	(a)
Nov. 6	Area	AMB-11/6-UP	Upwind	0830 - 1730	1080	0.000	<0.0005
		AMB-11/6-DN	Downwind	0830 - 1730	1080	5.093	0.002
	Personal	AMB-11/6-01	Tom L.	1400 - 1700	360	3.820	0.004
		AMB-11/6-02	Rick R.	1400 - 1700	360	14.006	0.015
		AMB-11/6-03	Fred M.	1400 - 1700	360	11.459	0.012
		AMB-11/6-FB1	Field Blank	NA	0	1.273	(a)
		AMB-11/6-FB2	Field Blank	NA	0	0.000	(a)
		AMB-11/6-FB2 (Dup.)	Field Blank	NA	0	11.459	(a)
Nov. 7	Area	AMB-11/7-UP	Upwind	0800 - 1700	1080	1.273	0.000
		AMB-11/7-DN	Downwind	0800 - 1700	1080	3.820	0.001
	Personal	AMB-11/7-01	Lindsey C.	1400 - 1700	360	33.104	0.035
		AMB-11/7-02	Maria D.	1400 - 1700	360	10.186	0.011
		AMB-11/7-02 (Dup.)	Maria D.	1400 - 1700	360	7.639	0.008
		AMB-11/7-FB1	Field Blank	NA	0	1.273	(a)
		AMB-11/7-FB2	Field Blank	NA	0	1.273	(a)
Nov. 8	Area	AMB-11/8-UP	Upwind	0905 - 1719	869	1.273	0.001
		AMB-11/8-DN	Downwind	0830 - 1725	803	1.273	0.001
	Personal	AMB-11/8-01	Rick R.	0949 - 1225 1425 - 1720	520	85.723	0.063
		AMB-11/8-01 (Dup.)	Rick R.	0949 - 1225 1425 - 1720	520	80.680	0.060
		AMB-11/8-02	Tom L.	0850 - 1205 1409 - 1715	480	13.867	0.011
		AMB-11/8-03	Phil M.	0901 - 1200 1410 - 1715	622	27.734	0.017
		AMB-11/8-03 (Dup.)	Phil M.	0901 - 1200 1410 - 1715	622	30.255	0.019
		AMB-11/8-FB1	Field Blank	NA	0	0.000	(a)
		AMB-11/8-FB2	Field Blank	NA	0	1.273	(a)

(a) Field blanks have no sample volume; results expressed as total fiber load (fibers/sq. mm)

(b) Triplicate analyses of this sample conducted for QC purposes.

Sampling Method: NIOSH 7400; Analytical Method: Phase Contrast Microscopy

TABLE 14 (continued)

Air Monitoring Results at the New Vernon Road Site

Date	Type of Sample	Sample I.D.	Sample Location	Sampling Period	Volume Collected *(liters)*	Fiber Load *(per sq. mm)*	Concentration *(fibers/cc)*
Nov. 9	Area	AMB-11/9-UP	Upwind	1000 - 1345	396	3.820	0.004
		AMB-11/9-DN	Downwind	1000 - 1355	325.5	1.273	0.002
	Personal	AMB-11/9-01	Phil M.	0955 - 1100	102	1.273	0.005 *(b)*
		AMB-11/9-01 (Dup.)	Phil M.	0955 - 1100	102	2.546	0.010
		AMB-11/9-FB1	Field Blank	NA	0	1.273	(a)
		AMB-11/9-FB2	Field Blank	NA	0	0.000	(a)
Nov. 1	Area	AMB-11/12-UP	Upwind	0955 - 1643	726.2	3.820	0.002
		AMB-11/12-DN	Downwind	000 - 1163	670	3.820	0.002
	Personal	AMB-11/12-01	Rick R.	1112 - 1321 1420 - 1626	436	17.649	0.016 *(b)*
		AMB-11/12-01 (Dup.)	Rick R.	1112 - 1321 1420 - 1626	436	15.128 7.639	0.013 0.007
		AMB-11/12-FB1	Field Blank	NA	0	0.000	(a)
		AMB-11/12-FB2	Field Blank	NA	0	0.000	(a)
Nov. 1	Area	AMB-11/13-UP	Upwind	1026 - 1637	649	3.820	0.002
		AMB-11/13-DN	Downwind	1031 - 1645	632	2.546	0.002
	Personal	AMB-11/13-01	Rick R.	1043 - 1220	166	5.093	0.012
		AMB-11/13-01 (Dup.)	Rick R.	1043 - 1220	166		0.009
		AMB-11/13-FB1	Field Blank	NA	0	0.000	(a)
		AMB-11/13-FB2	Field Blank	NA	0	0.000	(a)

(a) Field blanks have no sample volume; results expressed as total fiber load (fibers/sq. mm)

(b). Triplicate analyses of this sample conducted for QC purposes.

Sampling Method: NIOSH 7400; Analytical Method: Phase Contrast Microscopy

TABLE 15

AIR MONITORING RESULTS AT THE WHITE BRIDGE ROAD SITE

Date of Collection	Type of Sample	Sample I.D.	Sample Location	Sampling Period	Volume Collected (liters)	Concentration (fibers/cc)	Detection Limits (fibers/cc)
Oct. 29	Area	AMB-10/29-UP	Upwind	1456 - 1640	1,040	0.0005	0.0005
		AMB-10/29-DOWN	Downwind	1458 - 1635	970	<0.0005	0.0005
		AMB-10/29-DOWN (Dup.)	Downwind	1458 - 1635	970	0.001	0.0005
	Personal	AMB-10/29-1	Tom L.	1412 - 1629	274	0.002	0.0018
		AMB-10/29-2	Julia I.	1413 - 1633	280	0.004	0.0018
		AMB-10/29-3	Ron P.	1416 - 1631	270	0.002	0.0018
		AMB-10/29-FB1 (Blank)	Field Blank	NA	0 (a)	0.000	0
		AMB-10/29-FB2 (Blank)	Field Blank	NA	0 (a)	0.000	0
Oct. 30	Area	AMB-10/30-UP	Upwind	0930 - 1159	1,490	0.001	0.0003
		AMB-10/30-UP (Dup.)	Upwind	0930 - 1159	1,490	0.000	0.0003
		AMB-10/30-DOWN	Downwind	0919 - 1204	1,650	<0.0003	0.0003
	Personal	AMB-10/30-01	Maria D.	1336 - 1652	392	0.006	0.0013
		AMB-10/30-02	Bob M.	1337 - 1655	396	0.001	0.0012
		AMB-10/30-03	Rick R.	1340 - 1705	410	0.002	0.0012
		AMB-10/30-FB1	Field Blank	NA	0 (a)	0.000	0
		AMB-10/30-FB2	Field Blank	NA	0 (a)	0.000	0
Oct. 31	Area	AMB-10/31-UP	Upwind	0850 - 1715	1,010	0.000	0.0005
		AMB-10/31-DN	Downwind	0900 - 1700	960	<0.0005	0.0005
	Personal	AMB-10/31-01	Julia I.	1410 - 1720	380	0.010	0.0013
		AMB-10/31-01 (Dup.)	Julia I.	1410 - 1720	380	0.012	0.0013
		AMB-10/31-02	Ron P.	1345 - 1650	388	0.004	0.0013
		AMB-10/31-03	Tom L.	1342 - 1701	398	0.005	0.0C
		AMB-10/31-FB1	Field Blank	NA	0 (a)	0.000	[illegible]
		AMB-10/31-FB2	Field Blank	NA	0 (a)	0.000	0
Nov. 1	Area	AMB-11/1-UP	Upwind	1115 - 1748	1,179	0.000	0.0004
		AMB-11/1-DN	Downwind	1010 - 1720	1,290	0.000	0.0004
	Personal	AMB-11/1-01	Bob M.	1515 - 1729	268	0.005	0.0018
		AMB-11/1-02	Ron P.	1520 - 1720	240	0.004	0.002
		AMB-11/1-02 (Dup.)	Ron P.	1520 - 1720	240	0.004	0.002
		AMB-11/1-03	Rick R.	1517 - 1725	256	0.004	0.0019
		AMB-11/1-FB1	Field Blank	NA	0 (a)	1.273 (a)	0
		AMB-11/1-FB2	Field Blank	NA	0 (a)	0.000	0
Nov. 2	Area	AMB-11/2-UP	Upwind	0820 - 1200	675	0.001	0.0007
		AMB-11/2-DN	Downwind	0820 - 1200	675	0.001	0.0007
	Personal	AMB-11/2-01	Personal	0815 - 1200	450	0.004	0.0011
		AMB-11/2-02	Personal	0815 - 1200	450	0.010	0.0011
		AMB-11/2-02 (Dup.)	Personal	0815 - 1200	450	0.011	0.0011
		AMB-11/2-FB1	Field Blank	NA	0 (a)	0.000	0
		AMB-11/2-FB2	Field Blank	NA	0 (a)	0.000	0

(a) Field blanks have no sample volume; results expressed as total fiber load (fibers/sq. mm)

Sampling Method: NIOSH 7400; Analytical Method: Phase Contrast Microscopy

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TABLE 16

ASBESTOS CONCENTRATIONS USED IN RISK ASSESSMENT*

Site	Air			
	Sample Location	Sampling Period	Volume Collected (liters)	Concentration (fib/cc)
New Vernon Road	**Personal	1425-1720	520	0.063
White Bridge Road	**Personal	1410-1720	380	0.012

* The concentrations used represent the maximum detected concentration reported in the RI. The sampling method used is NIOSH 7400; the analytical method is phase contrast microscopy (PCM). PCM detects only fibers longer than 5 um and >0.4 um in diameter. The detection limit is 0.01 fibers/cc. Furthermore, PCM is a nonspecific technique and will measure any fibrous material.

** Sample was collected using personal monitoring equipment.

TABLE 17

Toxicity Values for Asbestos

INHALATION REFERENCE CONCENTRATION (RfC) FOR ASBESTOS

Not available at this time. (IRIS 3/19/91; HEAST Annual FY91)

INHALATION CANCER SLOPE FACTOR (SF) FOR ASBESTOS

Weight-of-Evidence Classification -- A; human carcinogen

Inhalation Unit Risk -- 2.3×10^{-1} per (fibers/ml) (IRIS 3/19/91)

The unit risk is based on fiber counts made by phase contrast microscopy (PCM) and should not be applied directly to measurements made by other analytical techniques. For both the New Vernon Road Site and the White Bridge Road Site, the asbestos calculations were based on the PCM method.

The unit risk was based on the assumption of a 20 m^3/day inhalation rate.

TABLE 18

Calculation of Cancer Risk Associated with Potential Exposures to Asbestos in the Air

Site	Adult Resident
New Vernon Road	1×10^{-3}
White Bridge Road	3×10^{-3}

Cancer Risk = Asbestos Air Concentration x Unit Risk